American Forests and Forest Life

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ADEQUATE FOREST FIRE PROTECTION by federal, state, and other agencies, individually and in cooperation; the REFORESTATION OF DENUDED LANDS, chiefly valuable for timber production or the protection of stream-flow; more extensive PLANTING OF TREES by individuals, companies, municipalities, states, and the federal government; the ELIMINATION OF WASTE in the manufacture and consumption of lumber and forest products; the advancement of SOUND REMEDIAL FOREST LEGISLATION.

The ESTABLISHMENT OF NATIONAL AND STATE FORESTS where local and national interests show them to be desirable; the CONSERVATIVE MANAGEMENT OF PUBLIC AND PRIVATE FORESTS so that they may best serve the permanent needs of our citizens; the development of COMMUNITY FORESTS.

FOREST RECREATION as a growing need in the social development of the nation; the PROTECTION OF FISH AND GAME and other forms of wild life, under sound game laws; the ESTABLISHMENT OF FEDERAL AND STATE GAME PRESERVES and public shooting grounds; STATE AND NATIONAL PARKS and monuments where needed, to protect and perpetuate forest areas and objects of outstanding value; the conservation of America's WILD FLORA and FAUNA.

The EDUCATION OF THE PUBLIC, especially school children, in respect to our forests and our forest needs; a more aggressive policy of RESEARCH AND EDUCATIONAL EXTENSION in the science of forest production, management, and utilization, by the nation, individual states, and agricultural colleges; reforms in present methods of FOREST TAXATION, to the end that timber may be fairly taxed and the growing of timber crops increased.

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Member A. B. C.

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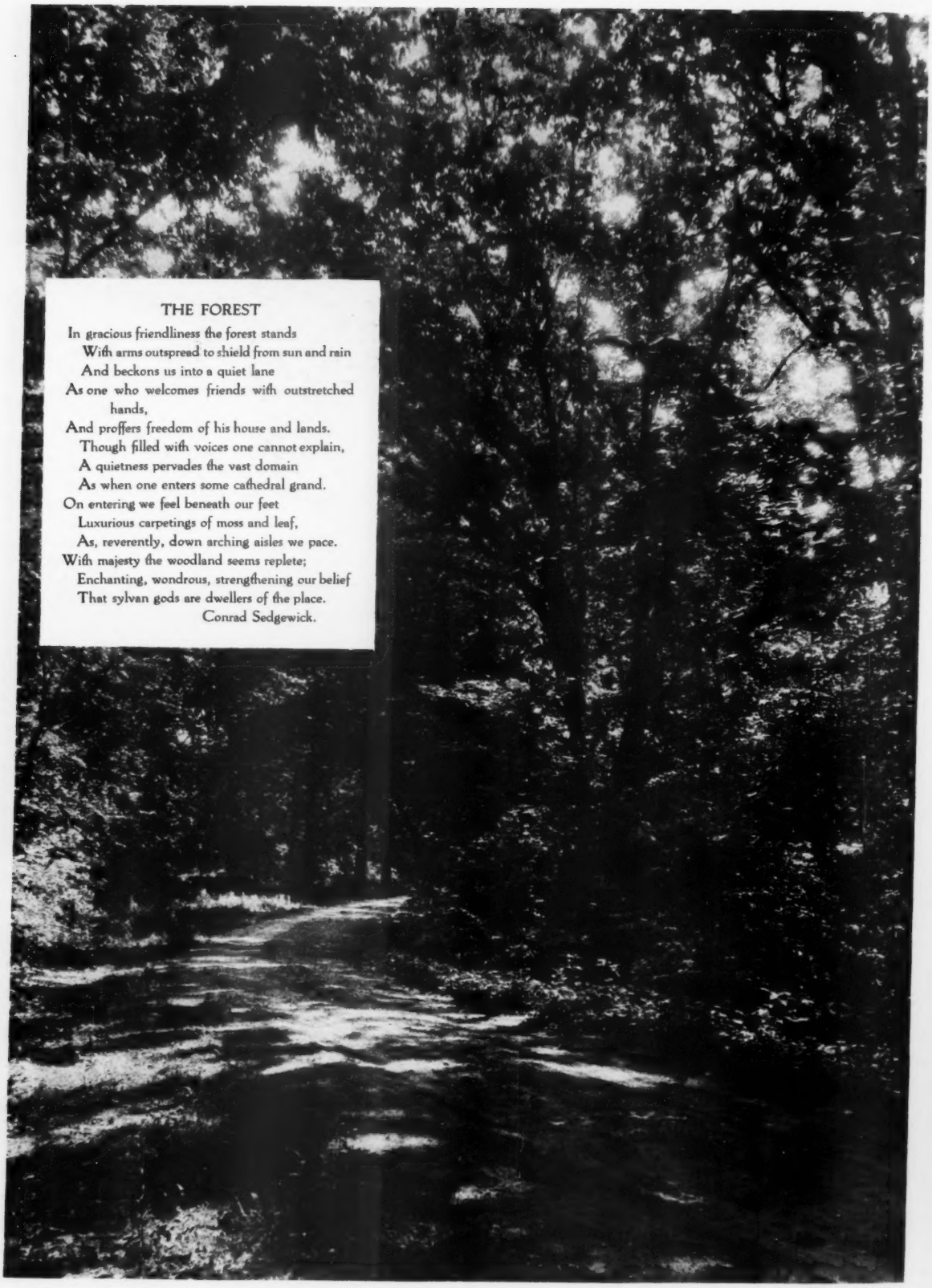


THE FOREST

In gracious friendliness the forest stands
With arms outspread to shield from sun and rain
And beckons us into a quiet lane
As one who welcomes friends with outstretched hands,
And proffers freedom of his house and lands.
Though filled with voices one cannot explain,
A quietness pervades the vast domain
As when one enters some cathedral grand.
On entering we feel beneath our feet
Luxurious carpetings of moss and leaf,
As, reverently, down arching aisles we pace.
With majesty the woodland seems replete;
Enchanting, wondrous, strengthening our belief
That sylvan gods are dwellers of the place.

Conrad Sedgewick.

Photo by Henry Hendricks Ketcham

The Roman Ships of Nemi

And the Woods Used in Their Construction 2,000 Years Ago

By Dr. Aldo Pavari

NEAR the picturesque town of Genzano, in an old volcano crater of the Lazio hills, the historical lake of Nemi is set in as a green gem. Many thousand-year-old legends are whispered around about the lake. On those slopes, once covered by thick woods, flourished the cult of Diana the Huntress, the deity of the forest, which the priests honored in the nocturnal rites beneath the silver rays of the moon.

The emerald-like shell, where the temple of Diana of Nemi was the goal of pilgrimages of all Latin peoples, was chosen by the Roman emperors as a place of pleasure and rest. But who was the emperor who, following the example of the Egyptian pharaohs, built ships in the manner of a floating palace that he might enjoy with greater freedom and refinement the enchantment of the lake and of its woody shores?

At first it was believed that the emperor of the ships of Nemi was Traianus, but an inscription found a few years ago at the bottom of the lake on a fragment of lead, revealed that the ships belonged to Caligula, to the merry, dissipated and fierce emperor whose name resounds sorrowfully in history.

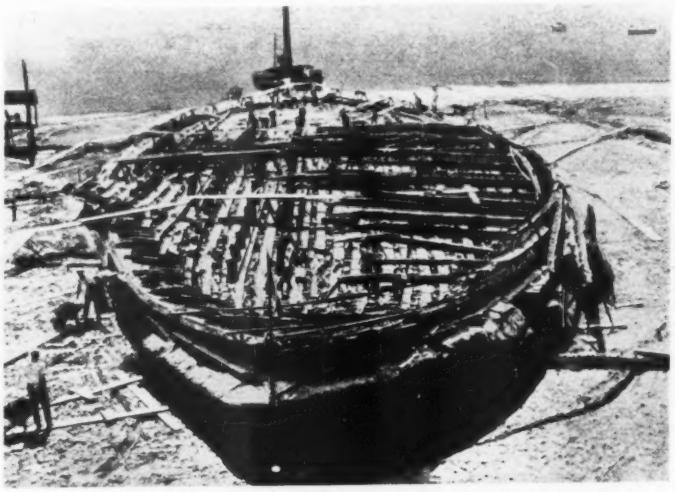
Many attempts were made in the past to restore to the light of the sun the ships of Nemi: in the year 1436 by the great Leon Battista Alberti; in 1535 by the architect from Bologna, Francesco de Marchi; in 1827 by Amerigo Fusconi from Rome; in 1896 by Eliseo Borghi. But all these attempts were fruitless. Borghi alone succeeded in recovering a few parts of one ship and a certain number of valuable bronzes, the magnificent workmanship of which intensified the interest in the ships which had been resting for 2,000 years on the bottom of the lake. This interest became more keen due to successful explorations made during the same year by the naval engineer Vittorio Malfatti who has gathered in one important volume the results of his searches.

But several decades elapsed before any initiative was taken.

Far in the depths of Lake Nemi—that "eye of dark emerald" high in the Alban hills—has lain for centuries the wrecks of two imperial barges of ancient Rome—supposedly pleasure boats of the mad Emperor Caligula. Repeated efforts have been made to bring them to the surface, culminating finally in success, and here lies the shell of one of them, on the wooded shore, a "ghost of ancient Rome."

In this field also, Benito Mussolini had to be the incomparable animator and realizer, and in 1927 he solemnly announced to the Roman Society of National History that the ships would see the light. A group of manufacturers from Lombardia met promptly the Duce's desire, assuming with high patriotic sentiment all the expenses for the undertaking. On January 3, 1928, an agreement was signed whereby the enterprising group pledged to lower the level of the lake as far as to uncover completely the first ship. The work began at once and consisted in the restoration of an underground channel of very ancient construction, probably Etruscan, which had been built to control the maximum level of the waters and which joined the sea through the Valley of Ariccia. The waters of the lake, drawn off by powerful pumps, were to find escape in this long subterranean gallery. The installation of the pumps was effected during the first part of 1928. They had a power of 1,500 liters a second and were put into action by 500 h. p. motors. The draining of the waters proceeded in such a manner that an average of three to four centimeters of the lake level was lowered each day. The water at the beginning had a depth of thirty-four meters.

In April, 1929, the first ship of Caligula began to emerge. At the end of that year it was completely dry, cleaned of the mud that had buried it, repaired and made accessible to visitors. The lake level had been lowered by 13.50 meters.



A near view of the great framework of the main-deck floor, giving some idea of its original form.

The interest which this construction has aroused throughout the world is great, both for the historical side and the artistic and technical one. There is set forth here only the characteristics of construction of the ship inasmuch as they may interest particularly technicians in woodwork and shipbuilding.

The ship of Caligula has a length of 66.88 meters and a maximum width of 20 meters. Its hull (body) is formed by several keels, one central keel having a diameter of 35 x 35 centimeters and by smaller lateral keels, two on each side. Above these the extremely strong knees and ribs are inserted, having a diameter of 34 x 22 centimeters, placed at variable distances, at about 50 centimeters. The outside belting of the lower part of the ship is formed by planks 32 centimeters wide and 9 x 12 centimeters thick. To support the deck of the ship there are stanchions of approximately one meter in height and 30 x 24 centimeters in diameter, mortising in on the madriers; they hold beams of 30 x 30 centimeters, and above these is found another series of stanchions and beams, on which the deck floor rests. But this second series has almost entirely disappeared. The preceding attempts at recovery have destroyed a large part of the stern, while only the wheelbase, very much damaged and worn, can be seen of the prow.

It is of great interest to foresters to learn what kind of wood was used for its construction. Recently, Professor Cesare Sibilia, of the Royal Station of Vegetal

Salvaged from the ruins—imperishable relics of the past. Left to right: A mooring post of Aleppo pine, topped with a lion's head of bronze; a magnificent lion head executed in bronze and a wolf head which is an outstanding bit of decorative bronze from classic times. In the oval above is shown the double-sculptured head of Satyr and Bacchante which topped a pillar of the parapet.

Pathology of Rome, made many microscopic analyses in order to determine the woods used. The author is indebted to Professor Sibilia for the reproduction in this article of the microphotographs taken by him.

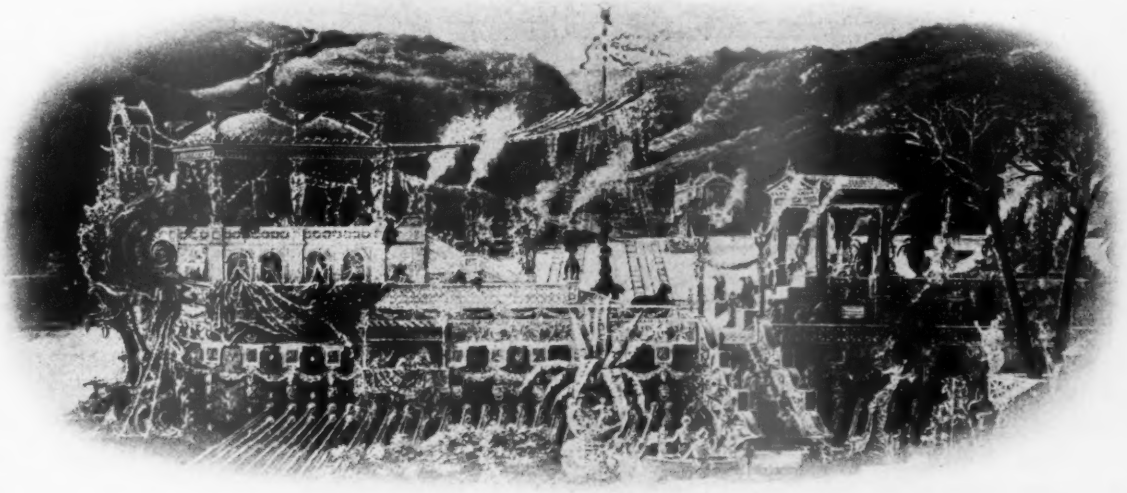
The predominant wood, that which forms the large beams of the keel, the straight parts of the ship's ribs, the planks of the belting and also the gangway (wharf) with which the ship docked at the shore, belongs to the pine group. In fact, it shows numerous vertical resin canals and on the transversal section two or three medium-sized holes are to be noticed between the medullar rays and the cells. Owing to the latter characteristic, it is very probable that the wood is from the species *Pinus halepensis Mill.* The *Pinus halepensis* is even today a very profuse variety in the Mediterranean basin, and remarkable forests of this pine are found at the present time both on the hills and low mountains of Umbria in the province of Terni. Therefore it is quite probable that this was the timber most readily accessible and at hand in those remote times, when, judging from the remarkable dimensions of the lumber from which the great beams of the keel and the large boards of the belting were cut, very beautiful forests must have existed. The wood of Aleppo pine was splendidly preserved while under water, and even after being immersed for so long a time, it appears in a perfect state of preservation, which fact is evidently due to its high content of resin.

Another coniferous wood was used in the building of the ship. It forms almost all of the interior woodwork, the minor planks of the belting, the vertical stanchions, the carlines, the doors and also part of the planks of the outside belting. Since this wood did not have the resinous canals it was easily classified as *Abies alba Mill,* owing to the characteristics of its medullar rays and of the formation of the wood's growth (early and tardy zone).

This fact is very important and interesting because it shows that some 2,000 years ago the European white fir was probably more generally grown in Italy on the Apennines chain than it is today. In fact all historical, geological and botanical researches lead to the same conclusion.

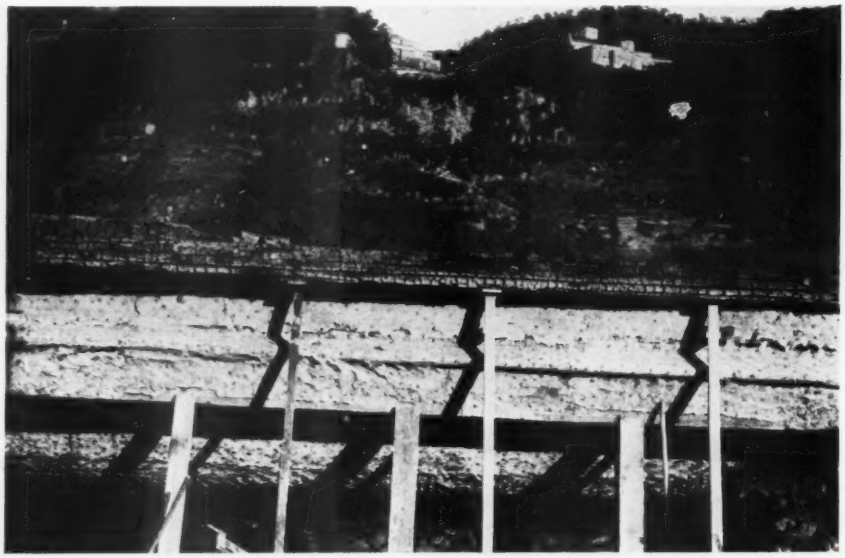
The wood of the dicotyledenous plants was used by the builders of the ship for the parts requiring bending, namely for the prow, the stern posts and the knees. The researches of Professor Sibilia have led to the conclusion that it was oak. Unfortunately the oak wood has resisted the ravages of time and water much less than the conifers, due to its low resin content. When placed in contact with the air it subdivides itself at once into small prisms, exceedingly fragile, so much so that it is difficult to separate the wood into parts under the microscope. Nevertheless it is possible to state, as shown by the microphotograph, that it was *Quercus pedunculata Ehr* and *Quercus sessiliflora Smith.* These two oaks also are characteristic of the Mediterranean flora and are generally used today in shipbuilding as they were in ancient times. The European elm, *Ulmus campestris,* is another "latifoglia" found in the ship, forming some parts of the knees.

The deck of the ship, supported by the double system of stanchions and beams, was formed by strong, large oak planks over which was laid a floor of terra cotta tiles above a thick layer of beton. The terra cotta floor was then covered by a second floor of beautiful mosaic of colored marble of which several fragments remain to be admired.



Built of the "stuff dreams are made of"—centuries ago the nobility of ancient Rome pleasured on the cool waters of Nemi, and worshipped the sacred Diana in her famous temple on the north shore. Gorgeous indeed is this artist's conception of one of the imperial barges as it might have appeared in those long gone days. (Used through the courtesy of "Art and Archaeology," Washington, D. C.)

The sturdiness of the construction, and above all of the floor, is explained when we consider that it had to support the weight of a real palace having a copper-covered roof. Various saloons decorated with statues and bronzes were in the palace and were provided with water and heating pipes of the system generally used by the Romans, that is of hot air circulation in the double walls of the rooms.

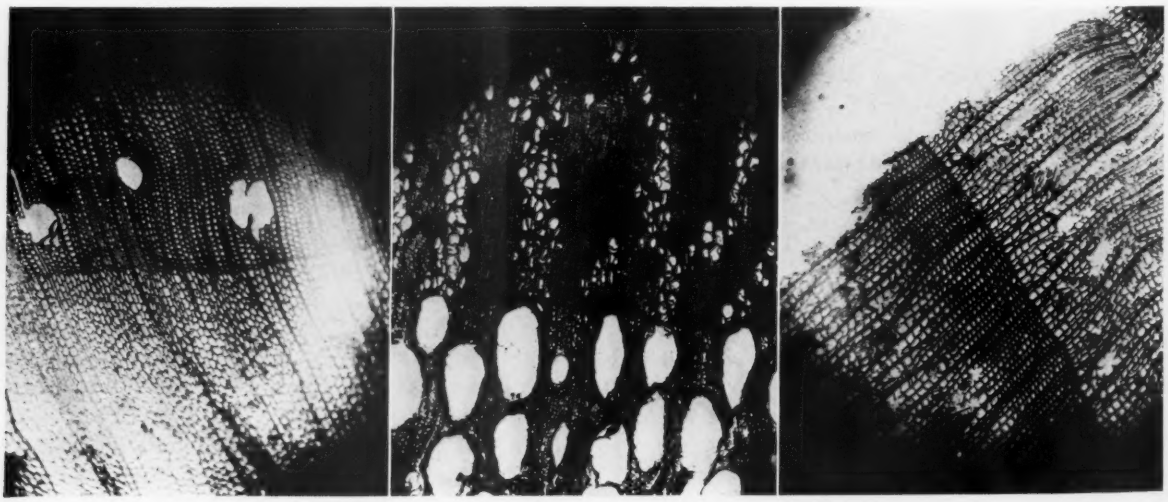


Detail of the belting with recovering of lead and copper nails. The wood of Aleppo pine was splendidly preserved while under water for centuries, and even after being immersed for a long time, probably due to its high content of resin.

In order to assure sturdiness and impermeability to the body of the ship, a layer of wool saturated with resin was placed over the belting of the keel, and finally an outside sheathing of lead sheets nailed to the wood belting with copper nails of peculiar make, that is, with a short stalk and large head, having on the lower end pointed reliefs that would stick to the lead. All the planks of the belting are connected on the heads by long nails going entirely through them. The ends are bent forming a right angle, then rebent and nailed again to the plank.

The use of hardwood (oak and elm) pins to join the planks of the belting closely together is very interesting. The nails, holding the hinges of the doors firmly, are also of oak. In examining the construction of the ship one can say that it represents a really great model of shipbuilding in wood and that all modern constructive technique is but the continuation of the one followed by the Romans. The commercial and warships used for long voyages must have indeed differed from those of Nemi, but the building principle must have been common to both. Therefore the ship of Nemi has an inestimable value as an historical monument of shipbuilding.

But this is not all. It has been revealed that the Romans already knew in those days the secrets of mechanics, using them in the very appliances. The (*Continuing on page* 610)



While woods of the pine group predominate in the main construction of the ancient ships, other species were identified and found to be in varying stages of preservation. Left: A microphotographic slide of Pinus halpensis. Center: quercus pedunculata Ehr (European Oak). Right: Abies alba Mill (European White Fir).

Grazing Out the Birds

Studies Reveal Abuse of Farm Woodlots Is Speeding Extermination of Bird Life and Inviting Invasion of Crop Destroying Insects

By RALPH K. DAY

THE steady decrease among certain of our native birds has been the subject of serious thought both to the lovers of our feathered friends and to entomologists who fully realize the great economic value of the insectivorous birds in the control of crop pests. Accurate surveys are almost impossible to obtain, but the best estimates indicate that this decrease is still continuing, in certain sections at an alarming rate, in spite of the passage in recent years of much legislation pointed toward preservation of bird life.

In certain of the better agricultural districts, particularly the tremendously fertile Corn Belt, the population of insect-loving birds has been reduced to such a pitiful remnant that many agriculturists are becoming concerned over the future possibilities of raising crops in the face of the constantly increasing army of insect pests. Because the scarcity of birds is influenced by the enormous reduction in the area of their natural habitat, the woods, the Central States Forest Experiment Station, at Columbus, Ohio, recently made a series of studies of the effect of woods grazing on bird life.

The amount of remaining woodland in the Corn Belt is less than ten per cent of the original area of forest. It is well known that most of our important insectivorous birds spend a good portion of their lives in the woods. Charles C. Adams, director of the New York State Museum, is authority for the statement that seventy-seven species, or seventy per cent of all the common species of birds nesting in the State of New York, are normally residents of woodlots. Obviously such a tremendous decrease in the wooded area has driven these birds from their former haunts to the rougher, less fertile, and better-timbered sections. The destruction of rail and worm fences, osage orange hedges, and cherry and red-cedar fencerows, and their replacement by modern wire fence, together with the hunting house cat and uncontrolled shooting, are additional factors making the modern farm untenable for bird life.

Most of these statements are mere recapitulation of known conditions. There is, however, one important condition less obvious but none the less serious in its effect, which has been almost entirely overlooked in evaluating the factors responsible for the desertion of the farm by the tree-nesting birds. This factor is the almost universal practice of grazing the farm woods in the better agricultural sections. While it is true that there is less than ten per cent of the original timberland remaining in the Corn Belt, this remnant is well distributed, and nearly every farm outside of the strictly prairie sections has from five to twenty acres of woodland. These patches of scattered woods logically would seem to afford ample protection, nesting facilities, and a semblance to their native habitat, sufficient to attract and hold a large proportion of the former bird population. Such, however, is not the case. Close to ninety per cent of these woodlands are being grazed and in nearly all cases there are several times as many head of stock as can be supported by the herbaceous vegetation available. The high agricultural value of the land has forced the Corn Belt farmer to keep every acre possible under cultivation with the

An ideal retreat for our feathered friends—an ungrazed farm woods with sufficient protective cover to attract and keep birds in the agricultural sections.

Photograph by R. B. Gordon

Nest of the Kentucky warbler. This is one of the many birds of value to the farmer which place their nests in underbrush at elevations of one to eight feet from the ground.

result that he maintains little open pasture land for his necessary farm stock and frequently crowds eight to ten head in a ten-acre woodlot, not with the idea that they will be supported on the vegetation present, but chiefly as a place to exercise. Practically every farmer keeps his stock on cultivated food, by-products and prepared rations, and depends on the woodlot to furnish only a certain amount of green forage as a conditioner.

It is commonly known that while a large majority of our valuable birds do love the woods, they are not all tree-nesters, nor do they all nest at the same levels. Four stories, zones, or strata are recognized as follows:

1. The ground stratum, occupied by those birds which nest directly on, or slightly above or below the ground level.

2. The thicket stratum, inhabited by all birds which usually nest in bushes or in small saplings, in tangles at the border of woods and in the undergrowth of the forest. The nests are from one to five feet above the ground.

3. The lower tree stratum, characterized by those birds preferring to nest in the lower branches and not needing so thick a covert as the preceding. Their nests are usually five to thirty feet above the ground.

4. The higher tree stratum, characterized by the larger birds which nest in the tree top.

There are, of course, birds which invade the stratum above or below them, but generally speaking they frequent their respective levels. Better than half of the bird life of the woodlot nest in the lower two strata, and include practically all of the insectivorous species important to the farmer and fruit-grower. Among these may be listed mourning doves, cuckoos, cardinals, towhees or chewinks, indigo buntings, migrant shrikes, red-eyed vireos, white-eyed vireos, ovenbirds, yellow-breasted chats and wood-thrushes. This list is augmented by the addition of species which nest in the thickets of the "forest border" such as bob-whites or quail, northern yellow-throats, mocking-birds, catbirds, brown thrashers, and Carolina wrens.

Obviously the natural habitat of the first two classes has been completely eliminated in the grazed woods while it is probable that the third has been seriously affected. This destruction of the nesting and breeding places is only part of the effect of overgrazing. The elimination of the thicket stratum in heavily pastured woods robs all of the woodland birds of an important source of food, the availability of which is an important factor in attracting and holding them. The dense understory of shrubs, young trees and weeds in the ungrazed woods provides an abundance of plant and animal food which supplements the diet of those birds that feed largely on injurious crop pests and furnishes the bulk of the winter food of those species which are year-long residents when their main items are unavailable.

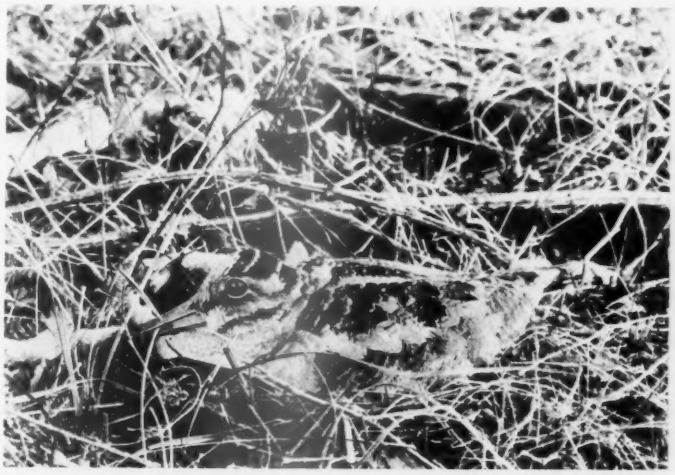
The average ungrazed woods in the Central States contain a large number of plants of particular importance in furnishing food for birds. The fruits of the elder, dogwood, service berry, hazel, sumac, grape, mulberry, viburnum, ironweed, strawberry, blueberry, and huckleberry are all delicacies on their menu. The winter buds of many shrubs are also eaten with relish. On the other hand, the heavily pastured woods contains few if any of the above and a much larger percentage of the weed species, the seeds of which, while eaten in large quantities during the winter, when the insect life is in cold storage, are not such as would attract birds because of their delicacy. In addition to the loss of this vegetable food, the insect life which normally lives upon this under-

A typical grazed woodlot in the Corn Belt. Note the absence of undergrowth suitable for birds nesting close to the ground.

growth is also not available. These insects, the plant lice, locusts, leaf beetles, hoppers, chaffers and weevils, caterpillars, spiders, sawflies and numerous others are important items of food and represent from ten to fifty per cent of the diet at certain times of the year.

While the conditions pictured here are representative of heavily grazed woods, the same situation exists in only a slightly lesser degree in all woods which are pastured to the extent that the stock is forced to turn to the shrubbery and young trees to supplement the insufficient herbaceous and grass forage. Even in very lightly grazed woods the stock in seeking succulent vegetation works its way into seemingly impenetrable thickets of coral berry, prickly ash and other excellent nesting places of the thrushes, quail, warblers and chickadees, causing considerable consternation among the residents, often to the extent that they will not return the following year. They also destroy the webs of the spiders; and in many ways upset the environmental factors favorable to the insect life upon which the birds are dependent. The characteristic hum of insect and bird life, so noticeable in undisturbed woods, is markedly absent in all of the heavily grazed woodlands and perceptibly less in all pastured areas. The overgrazed woods has a deathly silence, intensified by the only occasional chirp of the transient and discouraged feathered visitor.

The average farm woodlot in the Corn Belt is stocked with the equivalent of one cow for about every two acres. This is a significant fact in view of the estimates made by several agricultural experiment stations that an average of three and one-half acres are required per cow on the better farm pastures of the Middle West. Figures taken from 127 grazed and ungrazed woods studied by the Central States Forest Experiment Station at Columbus, Ohio, indicate that the amount of browse, weed and grass vegetation is less than half that of open pasture. In terms of relative forage value the difference is very much greater, for unpalatable shrubs and weeds such as coral berry, prickly ash, smartweed and ironweed often dominate the undergrowth. In the absence of detailed studies it is safe to say that at least three times as many acres are needed to support a cow in the woods as on open pasture. Obviously then these farm woods are stocked to the extent of approximately five times their carrying capacity. Direct damage to the young trees in the farm woods by browsing was found to be minor when the intensity of grazing fell below one cow for every ten acres of woodland. But for the fact that these animals are mostly corn fed they would soon starve to death.



Photograph by Edward S. Thomas

A woodcock's nest. Resident of the deep, ungrazed woods, we must be content with his permanent departure unless provision is made for him.

In view of the above estimate, it is clear that the farmer is not deriving any material benefit from the forage, in fact most farmers recognize that their woodlot is little more than natural shelter from sun and flies and a place for stock to run. This is reflected in the relative rental value of open and woodland pasture. O. V. Alderman, assistant state forester of Ohio, states that the average rental value for woodland pasture as given by farmers is about thirty-five cents an acre. The average of good bluegrass pasture land is from $2 to $3 an acre.

No reliable estimate of the economic value of birds in dollars and cents has ever been attempted, so it is impossible to compare the financial gain or loss in grazing the woodlot and destroying the cover, or protecting the woods and conserving the bird life. The recent statement of Dr. Gus H. Radebaugh, director of the Illinois Department of Conservation, will give some idea of the tremendous economic value of the birds of the farm woodlot. "Birds are one of our state's most valuable assets," said Dr. Radebaugh. "Destroy them and

(*Continuing on page* 594)

What chance has this little lady in a grazed woodlot? The whippoorwill lays her eggs directly on the ground and could not long survive against grazing animals.

A New Place to Play

Scenic Yakima Park, Rivaling the Glories of Paradise Valley

By Heister Dean Guie

Photographs by Asahel Curtis

In this new playground, ancient Douglas firs lift their great columns in primeval splendor.

SCENERY, the kind that baffles adjectives, is lavished all around in the wilderness empire that will be opened soon to motorists with the completion of a $4,250,000 state highway through Chinook Pass in the Cascade Mountains of Washington.

A storybook land of enchantment is this little-known chunk of out-of-doors, a sublime jumble of blue-green mountains, snow peaks and fanged ridges sweeping to mysterious horizons, of awesome canyons and laughing waters and flower-painted meadows—all dominated by the regal, glacial grandeur of Mount Rainier. In it man has trod but lightly. Nothing has been tarnished. It is there waiting in primeval splendor for the tourists on rubber tires.

The highway, 143 miles long, from Yakima in central Washington to Renton, a suburb of Seattle on Puget Sound, will be the state's third and most scenic transmountain motor road. Smooth as a metropolitan boulevard, with a grade nowhere exceeding six per cent, it will lure the city-worn by the thousands into the clean fastness of the high country.

Only a short stretch through the heart of the range and Chinook Pass remains to be graded and surfaced to link the completed sections leading up from east and west. There is a chance that this last bit of construction may be finished before snow flies in the fall. The state highway department is promising the opening of this unit in the spring or early summer of 1931.

Officially designated as a part of State Road No. 5, or National Park Highway, the highway commonly is referred to as the Chinook Pass. From Yakima west it traces the Naches River Valley for forty-five miles. Originally, in the early stages of the project, it was called the Naches Pass Highway, because construction was contemplated via the pass near the headwaters of the Naches River sixteen miles northeast of Chinook. A wagon trail was blazed across Naches in 1853 by a party of intrepid pioneers bound for Puget Sound.

Abandonment of the plan to run the highway through Naches Pass brought protests from old settlers and others seeking to have the historic cross-

ing perpetuated. Chinook Pass, however, although higher—5,440 feet as compared with 4,825 feet elevation for Naches—was deemed more desirable, chiefly for the reason that it would fit in better with the road-building program within Rainier National Park. Chinook Pass fronts the middle of the park's eastern boundary, while Naches is ten miles by airline from the park's northeast corner.

It will be easy to drive from one end of the highway to the other in less than five hours, but few persons making the trip for the first time will fail to turn off for a visit to Yakima Park, a new sub-alpine playground 6,500 feet above sea-level in Mount Rainier National Park. Heretofore accessible only by horse trail, Yakima Park has been tapped with a fifteen-mile, $975,000 National Park Service road that was finished this year. It connects with the Chinook Pass highway at the White River entrance to the national playground.

Yakima Park possesses all the natural attractions of popular Paradise Park on the south slope of the mountain, plus greater size. More than two miles long and attaining a width in places of more than a half mile, it offers plenty of elbow room and exceptional opportunity for orderly development.

To provide comfortable accommodations for those who want to "camp out," $20,000 is being expended on camp-site facilities and a water system. The water is being piped two miles from Frozen Lake. For travelers demanding de luxe accommodations, a million-dollar hotel will be erected by the Rainier National Park Company, which operates the big hostelry in Paradise Valley. A community house costing $30,000 is another projected feature. Organizations and individuals interested in the exploitation of the park will sponsor a public subscription campaign to raise funds for the structure. It is estimated that 3,000 visitors will register daily at Yakima Park during the height of the season, and that 8,000 to 10,000 persons will enjoy the park each week-end.

The City of Yakima, center of a rich agricultural and live-stock region, will be the gateway for most of the eastern tourists out to explore the Cascade wonderland. Auto stages will be available for those who do not have their own cars. For

The snow-girdle worn by Lake Tipsoo melts fast, once the summer sun turns its enamored eye upon her in this land of beauty and enchantment. But Rainier—the "Snow Queen"—remains ever cooly aloof and distant, unapproachable in her robes of perpetual white.

nineteen miles out of Yakima the highway winds up the fertile Naches Valley. It ribbons past orchards and farms that are backed by picturesque bluffs and sagebrush hills. Where the pavement ends and the eighteen-foot-wide, crushed-rock-surfaced roadway begins, the wilderness creeps nearer; the bluffs reach higher, and the hills, achieving greater dignity, are patched with pines. The mountains loom intimately. It is a run of but a few minutes from there into the park-like stands of yellow pine that deck the narrowing valley and boulder-knobbed foothills, and soon the road is a charming lane shaded by stately pines, firs and tamaracks of the Rainier National Forest. On the left churns the sparkling Naches, alternately washing gleaming gravel bars and splashing the abutments of bold palisades bulging from the mantle of greenery across the river. Companion walls of stone on the highway side of the stream thrust back the forest at frequent intervals.

At the confluence of the appropriately named Bumping River and the Naches, the highway forsakes the latter and skirts the Bumping a short distance to the American River, which then is its affinity for nearly fourteen miles. Finally dismissing the American, it climbs along the face of a mountain to the notch in the range that is Chinook Pass. This stretch, six miles in length, replaces a tortuous, rather hazardous wagon road which venturesome sightseers formerly used to gain the summit.

A panorama unsurpassed anywhere in the Pacific Northwest—Yakima Park—the gateway for eastern travelers
Rainier, scenery baffling description is offered. The White River drops 3,000 feet below the far rim of the open
across the canyon. The frozen mass curving downward

Chinook isn't just another cleft in the backbone of the Cascades. It is an adventure in itself, a climax with a wallop. From it unfolds a panorama of staggering dimensions and unforgetable beauty, a panorama unsurpassed anywhere in the Pacific Northwest. Straight ahead, scarcely five miles away, bulks lordly Rainier, stupendous, chilly, serene, giving no hint of slumbering volcanic fires banked beneath centuries-old layers of ice and snow. To right and left an infinity of ridges, some toothed and naked, others rounded and softened

by their plush of forest, recede tier by tier into the haze where sky and earth meet. Fifty miles to the south, Mount Adams and Mount St. Helens lift their white cones in friendly rivalry. And in the immediate foreground, framed by snow or flowers, according to the calendar, dainty Lake Tipsoo holds a mirror for Rainier.

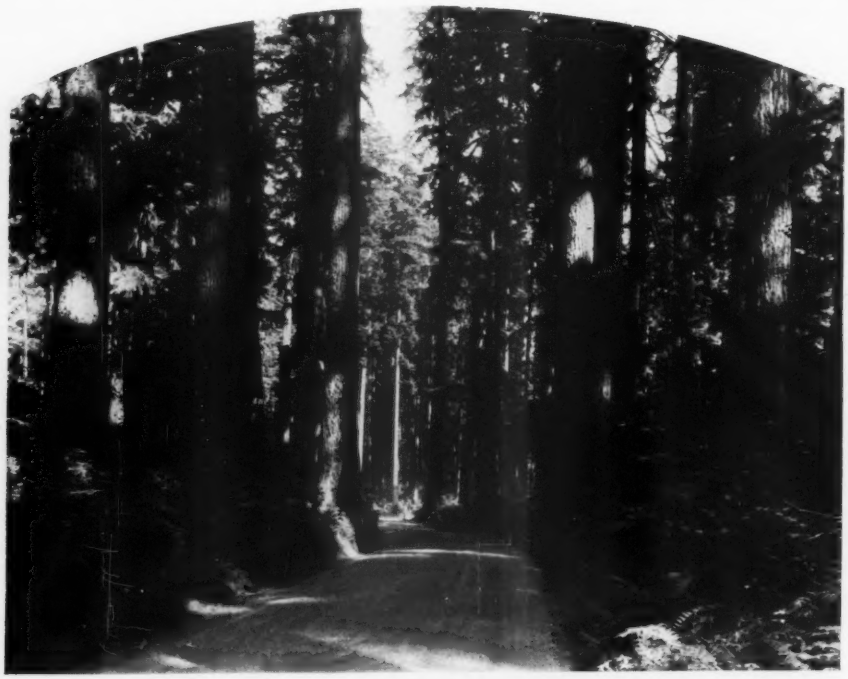
Threading around Tipsoo, the highway drops down the western slope by way of Cayuse Pass, Sheepskull Gap and Forest, the United States Forest Service has set aside the land bordering the highway as a recreation area, approximately sixty miles long and generously wide, from canyon wall to canyon wall. This is known as the Cascade Parkway. Credit for its establishment goes to the late Stephen T. Mather, who suggested the plan while he was Director of the National Park Service.

A program for the proper development and protection of

into this wonderland of the Cascades. Here nothing is tarnished. Dominated by the sublimity of Mount area. A great hotel is to be built near the brink at the middle left, about opposite the near edge of the steep slide in glistening beauty at the right is Emmons Glacier.

Klickitat Creek to the White River entrance, five miles from Chinook, where it follows the course of the milky, glacial-fed White River, first northerly brushing the park boundary, and then northwesterly through thirty miles of virgin Douglas fir, cedar and hemlock timber, which thins out to second growth and farms in the vicinity of the town of Enumclaw. It is paved on into Seattle, intersecting paving leading to Tacoma, Olympia and other western Washington cities.

To keep iniviolate the roadside beauty within the National the parkway has been formulated by the Forest Service, which has mapped the entire area and determined upon the uses of each part of the total distance. Various restrictions will be imposed. For instance, bathing will be allowed in Lake Tipsoo, but camping will not be permitted on or near its shores, so that the pristine loveliness of the spot will remain unmarred. Sites will be designated for public camps and for the so-called permanent private camps obtainable at nominal rentals, carrying out the tried and successful policy of the



The Naches Pass road winds in parklike fashion through Douglas fir forests north of Rainier National Park. This is a virgin stand of Washington timber, containing more than 100,000 feet to the acre.

Forest Service effective in the previously accessible portions of the Naches and White River valleys and throughout the West. With the parkway as a starting point, many interesting hiking and horseback trips may be taken over Forest Service trails on both slopes of the Cascades, and the innumerable rivers, creeks and high mountain lakes afford good trout fishing.

In the upper White River valley, outside of the Rainier National Forest, there is a belt of magnificent timber along the highway that should be preserved and added to the parkway. It flanks the road for almost twenty miles. Whether this stand can be saved is a question. Its rescue from private ownership and the menace of logging is one of the goals of the Rainier National Park Advisory Board, which is composed of representatives of the Automobile Club of Washington, the Mountaineers' Club, the Rainier National Park Company and eight chambers of commerce.

Continued road development will be conducted as has been the Chinook Highway—Yakima Park phase. By 1934, it is planned, the complementary federal and state road-building activities will tie the Chinook Highway and Yakima Park with Paradise Valley and southwestern Washington.

A five-year road program, recently expanded into one covering a ten-year period for the National Park and calling for an outlay of $9,704,072, will establish a scenic drive from Narada Falls at the lower end of Paradise Valley east and north to the park boundary opposite Chinook Pass. A mile of state road will join the drive with the pass highway, probably at Skeepskull Gap. In the western part of the national playground, the National Park Service has begun construction of a thirty-eight-mile road from the Nisqually entrance north to Spray Park, where another hotel ultimately will be erected.

Chinook Pass in early June—unforgettable beauty is here—the deep, plush green of the forest against the gleaming snow. The route of the highway is marked by the strip of bare ground in the depression. The mountain is Yakima Peak.

Forestry In New Zealand

By Alec R. Entrican

Engineer in Forest Products, New Zealand State Forest Service

THE story of forestry in New Zealand is a colorful picture of modern business methods applied to Government administration. From an insignificant place in the forestry world this British Dominion of the South Seas, almost overnight, has leaped into prominence by developing forestation operations on a larger scale than any other country in the world, excepting Japan. Its present rate of planting exceeds 75,000 acres a year. Although only about one-thirtieth the size of the continental United States and with a population of but one and one-half millions, New Zealand is planting several times as many acres of forest land as is the federal government of the United States.

These results have followed an awakened forest conscience, the application of mass production methods to tree nursery practice, reduced costs of tree planting and active participation by commercial interests in forestation work; and one and all they reflect the enterprising genius of the active Canadian, L. MacIntosh Ellis, who since 1920 has become one of the most constructive and outstanding figures in the forestry world.

New Zealand's forests are generally subtropical in character, with a luxuriant undergrowth of palms, filmy ferns and sedges

Reforested waste land—a plantation of Insignis Pine or the Monterey Pine of California (*Pinus radiata*)—put out in 1904 and thinned in 1913.

New Zealand's forest policy was for many years "the good old cut, hack and burn policy." In less than 80 years it succeeded in clearing about 77 per cent of its virgin forest land or over 40,000,000 acres. Much as they did in North America, the sturdy pioneers cleared acre after acre of forest land. They were land hungry and took much of what was not good for their agricultural pursuits. From time to time a lone voice would cry out against the wanton destruction and now and then a politician would endeavor to apply remedies by appropriating monies for Royal Commissions, Government reports and even for spasmodic tree planting, but generally speaking the efforts were half-hearted and with the exception of establishing the principle of creating Forest Reserves from Crown-owned lands little of importance was accomplished.

Eventually the economic situation precipitated a crisis. The public suddenly found itself paying rapidly increasing prices for lumber, paying, too, for heavy rail and sea freights on an everyday commodity. From 1901 to 1922 the average mill value of lumber rose from $18 to $51 a thousand feet, while the rail freight to the two largest consuming centers has almost doubled.

Sir Francis H. D. Bell, New Zealand's ablest statesman

In the Rotorua Region the man-made forests are approac hing the 100,000-acre mark. Pine, Larch and Eucalyptus predominate. Rotation for *Pinus radiata* is about 33-35 years, and the forest in the foreground is twenty years old.

of recent years, was quick to appreciate the growing dangers of the old "cut, hack and burn policy," and immediately after the conclusion of the World War he declared for the establishment of a competent forest authority and the provision of adequate funds to enable the government to provide for the perpetuation of the country's wood supplies. What is more, he achieved all these objectives. L. MacIntosh Ellis, a Canadian forester with both American and European experience, was selected to direct the government's forest activities. Assisted by Arnold Hanssen as chief inspector, he formed the New Zealand State Forest Service. Its primary object was to secure the economical use of all forest land whether forested or not, and thereby to assure the country a perpetual supply of wood products, to prevent land erosion and to regulate stream flow. Wise and far-reaching legislation was enacted rapidly to provide the necessary machinery and already within the short space of eight years many of the problems involved are well on their way to solution. Mr. Ellis has since been succeeded as Director of Forestry by Mr. E. Phillips-Turner, Mr. Ellis having recently left New Zealand to take up a more promising appointment with one of the prominent Australian commercial forestation companies. His departure has been much regretted and is a distinct loss to the Dominion.

The organization of the State Forest Service is similar to that in the United States, the Dominion being divided into some seven forest conservation regions or districts. Each region is in charge of a conservator of forests who is responsible for timber sales, fire protection and reforestation work. Separate branches deal with silvicultural research and experiment stations and with forest products research.

With the exception of a few species the same timber trees are found generally throughout the islands and form forests with subtropical characteristics. The timber trees and the greater number of those forming the under-story are evergreen while the undergrowth is normally very luxuriant and may consist of nikau palms, tree ferns, filmy ferns, epiphytes, sedges and lianes. The softwood species of primary commercial importance and yielding 97 per cent of the annual cut are: Rimu or Red Pine (*Dacrydium cupressinum*), White Pine (*Podocarpus dacrydioides*), Matai (*Podocarpus spicatus*), Kauri (*Agathis australis*), Totara (*Podocarpus totara*). The commercial hardwoods are: Beech (*Nothofagus Menziesii, Nothofagus fusca* and *Nothofagus truncata*), Tawa (*Beilschmiedia tawa*).

These species are obtained from three general types of forest growth. As its name implies, the northern kauri forests are dominated by the kauri although both totara and rimu are important constituents of the type and are exploited along with the kauri. Its distribution is confined to the northern peninsula of the North Island—the locality where Zane Grey catches larger fish than figure in most North American fish stories. Beside its 1,000 pound fish record, the country once had a kauri tree with the record diameter of 22 feet.

The taxad or rain forests comprise the greater part of the remaining important commercial stands and include three principal types—the rimu, totara and white pine types—so called according to which species dominates the stand. The rimu is the commonest type throughout the Dominion and with the exception of kauri has most of the important softwood and hardwood species associated with it throughout its range. The totara type, although of somewhat the same

composition as the rimu, prefers the drier spurs of the rain forest region and has its optimum in the central district of the North Island. Often of a pure type the white pine stands usually occupy the alluvial flat lands, and due to the high fertility of such areas the tendency has been to clear them as rapidly as possible.

The other type of commercial forest growth is of importance to the future rather than to the present. It is known as the dry forest, although it is not necessarily confined to areas of low rainfall. On dry sites, however, the type is generically pure consisting of various species of beech. (*Nothofagus sp.*). It is found on the high lands in the central districts of the North Island and on the eastern slopes of the mountain backbone of the South Island, extending to the West Coast and merging into the rain forests to a considerable extent, where the rainfall is high.

The first two years of the administration went largely to the demarcation of Crown-owned forest lands and to their establishment as state forests, to a survey of the virgin forest resource and to a study of the relation of lumber consumption to forest growth. That work is reflected today in the forest service management of over seven and one-half millions of acres of state forests equal to almost twelve per cent of the total land area and representing over sixty per cent of the forested land. The government is, therefore, the most important owner and seller of stumpage.

A forest and wood use survey clarified the whole forestry situation. It revealed that only twelve million acres or eighteen per cent of the total land area of New Zealand remained under forest and that of this area only six million acres carried merchantable forests. Many forests contained over-ripe and mature timber and there was no net growth, new volume being offset by decay. On the average the annual net increment was only 11.3 cubic feet an acre.

The 6,000,000 acres of merchantable forest with a growing stock of 5,200,000,000 cubic feet of softwoods and 3,200,000,000 cubic feet of hardwoods were estimated to give a net annual increment of 69,000,000 cubic feet, whereas the total wood requirements of the country approximated some 82,000,000 cubic feet, representing a total annual deficiency of 13,000,000 cubic feet. Moreover, this total deficiency of 13,000,000 cubic feet was made up of a surplus growth of 13,000,000 cubic feet of hardwoods and a deficiency of 26,000,000 cubic feet of softwoods. It was easy to conclude from these data that to bring the virgin forests under intensive management and to secure from them an increment comparable with European practice would take well over a century, would involve expenditures beyond the resources of the state and withal would fail to provide an adequate and continuous supply of wood for the country's needs during that period. Clearly, the annual cut had so far outstripped the growth that for all practical purposes the virgin softwood resource would be exhausted within fifty years.

These high lights of the forest survey resolved themselves into the simple question of how to establish within fifty years a forest capital which would at least meet the country's domestic wood requirements until the native forests could be brought into a state of continuous wood production. Early experiments in tree planting, some of them dating back over seventy years, supplied the answer: Softwoods from other countries, notably from the Pacific Coast of North America, had been found to grow rapidly and with vigor and health. Their increment had been found to be large, so large in fact that once the government had broadcast its findings and

New Zealand's wonder tree nursery, with the famed geysers and hot springs in the left foreground. Over twenty-two million tree seedlings were raised here in 1926. The record was beaten last year and will be beaten again this year.

declared its policy of establishing within ten years forest plantations of 300,000 acres of rapidly growing introduced softwoods, private and commercial interests and other public authorities immediately responded by committing themselves to the formation of large additional plantations that would aggregate 150,000 acres. The government estimated that the 450,000 acres would yield in perpetuity some 675,000,000 feet B. M.—an amount sufficient to take care of the growing demands of the Dominion from 1965 onwards.

The fulfillment of the government's forestation policy is an unbroken record of one signal achievement after another. Each year the government has planted a larger area than previously and each year costs have been reduced. In 1921, 1,400 acres were planted at a cost of $46 an acre, but in 1928, 60,000 acres were planted at a cost of less than $13 an acre. Annual sales of tree seedlings to farmers, local bodies and forestation companies have grown from one-half million in 1921 to five million in 1927, although reaching only three and one-half million in 1928. By the end of the 1929 planting season it is estimated that the state forest service plantations will total 250,000 acres.

A heavy stand of beech in the South Island. Known as the dry forest, this type is of commercial importance to the future of New Zealand.

Initially the forestation policy was one of centralization but this has been abandoned to some extent in favor of planting up waste lands adjacent to large consuming centers. The species most widely propagated are: Insignis Pine (*Pinus radiata*), Western Yellow Pine (*Pinus ponderosa*), Corsican Pine (*Pinus laricio*), Douglas Fir (*Pseudotsuga taxifolia*) and Lawson's Cypress (*Cupressus Lawsoniana*). Although many reports have been circulated in this country as to the importance of California redwood (*Sequoia sempervirens*), in the New Zealand forestation program, this species does not form much more than one per cent of existing plantations and even with more extended propagation in the near future is not likely to rival many of the species already mentioned. At present a spacing of eight feet is favored for plantation establishment. All plantations have 100 per cent fire protection, consisting of patrols, look-out stations, telephone communication and fire-fighting equipment of the most modern type, in addition to which the natives from adjoining villages in some districts, deriving as they do either the whole or the major part of their income from the plantations, constitute a very efficient and zealous fire patrol.

Under the New Zealand system of taxation the land supporting indigenous forests and plantations is subject to both land tax and local rates, but the value of the land is taken as the so-called "unimproved value" and does not include the value of any trees or the value of the labor or capital expended in planting them.

Exact data are not available as to the area planted by county councils, city corporations, borough councils and other local bodies, but it is probable that the total is now approaching some 20,000 acres, the annual plantings varying from 1,000 to 1,500 acres. As evidence of the active participation of private interests in forestation work it may be mentioned that investors have agreed to subscribe some $17,000,000 for the work. Two kinds of organizations have been formed to carry out the various ventures. The first is the joint-stock company, where the property in the forests is vested in the company, each shareholder receiving a share of the profits according to the amount of capital contributed. The second is a private company registered with a comparatively small capital, but in which the investing public do not become shareholders. The company contracts with each investor that, in consideration of his paying the prescribed amount of cash, it will convey to him at the end of a given time a certain area of land duly planted according to a prescribed agreement. The interests of the investing public are watched over by trustees appointed by investors, and the lands concerned are conveyed by way of mortgage to the trustees until the time for conveyance to the investor arrives. Of the sixteen returns received from companies engaged in forestation operations during the year ended March 31, 1928, six were from companies organized on the latter basis; but, though in the minority in point of numbers, they quite easily do the bulk of the forestation business, one company alone for instance, reporting that it had a net area of 106,202 acres already planted.

A feature of commercial forestation is that the planting operations follow closely behind the sale of the so-called "bonds" or agreements to plant, (*Continuing on page* 611)

Photograph by R. M. Brinckerhoff

Preparing the great American outdoor banquet—the barbecue. Here the roasting meat, sizzling and crackling, is being turned over the open pits with long sticks.

Let's Have a Barbecue

By Will C. Barnes

"UNCLE BILL, our class wants to have a barbecue like they used to have out West. But nobody knows how to make a barbecue pit. Did you ever make one?"

Uncle Bill laid down his book and eyed his nephew quizzically. "Did I ever make a barbecue pit? Surely I have, big ones and little ones. When I was a cowboy"—Uncle Bill loved to tell of the old days on the range—"we often killed a yearling for the round-up wagon. We would dig a hole in the ground about two feet square, and over this build a fire of cedar logs which, when burned down, filled the hole nearly full of red-hot coals. Then the yearling's head, with horns, tongue, eyes and all was wrapped in two or three wet gunnysacks. About half the coals were scooped from the pit and the head placed in it, and the rest of the coals shoveled over it. On top of it all, the dirt from the pit was piled and rounded into an air-tight mound.

"The next morning when the last guard came in from the herd and the cook yelled 'chuckaway' someone would open up the pit, lift out the head with a shovel and lay it carefully on a clean gunnysack. If everything had gone right, the skin was easily pulled away from the head leaving about the choicest bit of eating a bunch of hungry cowboys ever sunk their teeth into.

"Squatted on our heels in a circle with our pocket knives for tools, a tin cup full of hot coffee and hot sour-dough biscuits fresh from the huge Dutch oven, the way we would wade into that yearling's head was a caution. Someone brought a handful of salt in a tin plate from which we helped ourselves. The head generally fell apart as the outer meat was cut away, exposing the tongue, brain and other edible parts. Even the eyes were considered delicacies by some of the boys. It is surprising how much good meat there is on a yearling's skull. When the meal was over, nothing remained but the little horns, the hide and a pile of clean-picked bones. No buzzards ever did a better job on a carcass than those hungry cow persons."

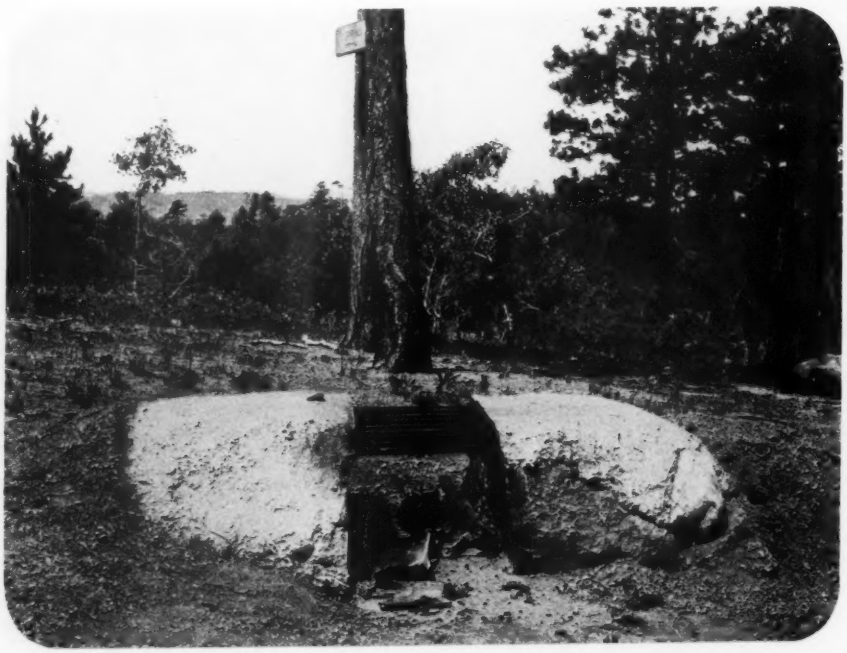
Uncle Bill licked his lips appreciatively. "That's one kind of a barbecue," he continued.

"But the kind you want to know about is what we used to

have in the little cow towns in Arizona when we celebrated the 4th of July. Those were the real times. There was steer-roping, broncho-busting and chuck-wagon races. A whole steer was barbecued for dinner, and we danced the rest of the day, with more dancing and fireworks galore at night."

A few days later, under Uncle Bill's guidance, the boys staged a barbecue that none of them will ever forget. He had been the busiest man in town getting things ready for the affair.

A kindly farmer not far from town gave them permission to use his woods, composed mostly of fine old oak and chestnut trees with worlds of dry logs and limbs for firewood. Nearby a spring bubbled out from beneath the roots of a patriarchial old oak.



A type of fireplace, easily constructed, which will serve splendidly for the average small barbecue.

Bright and early, Uncle Bill arrived on the scene with a car full of eager boys and all sorts of tools and supplies. He chose an open spot between two old oaks. "Far enough from the trees so our fire won't damage the overhanging limbs," he explained. Here he staked out on the ground an oblong space six feet long and four wide. "This will be a small pit," he explained, "because there won't be so many of us."

In relays the boys dug a grave-like hole, four feet deep, within the space staked out. It had sloping sides so that at the bottom it was twenty-four inches wide and thirty-six inches long. While the digging crew was busy, Uncle Bill sent another bunch down to the creek in the truck with orders to bring up a load of boulders with which to line the pit. The boys were all curious to know the reason for the sloping sides, but not until they were ready for the rocks did he explain.

"You see, boys, with the slope to the walls we shall have no trouble in laying these boulders one on top of the other without mortar. The rocks laid that way will throw out a lot of heat."

First they covered the bottom of the pit with some of the largest rocks. Then on each of the four sides they built up a wall of medium-sized rocks clear to the top. Uncle Bill showed them how to break the stones with an old ax so that when finished they had a firm wall about six inches thick clear round the pit. With the wall in place their pit at the bottom was about ten inches wide and eighteen inches long.

Armed with axes some of the boys went into the timber for firewood. What they lacked in skill they made up in enthusiasm. Under Uncle Bill's direction a nest of pine shavings and bits of pine wood were laid on the floor of the pit. Over this was piled the oak wood evenly and regularly until it was above the top stones. When the boys began to put the wood in place, Uncle Bill brought in a smooth round post about six inches in diameter and six feet long. This he set up on end in the pit and held it while the wood was piled around it. The boys tried hard to guess its purpose. "Wait and see," he told them.

By this time it was mid-afternoon. A sandwich luncheon was all the boys had eaten. Uncle Bill knew boys mighty well. Digging holes and chopping wood is hard work. "We'll call it a day, boys." He got out his notebook and a stubby pencil. "Let's see now. How many of us will there be to eat tomorrow. We got to figure out how much meat we will need."

"Can't we bring some of the girls?" asked one lad.

"Surely," was the hearty answer, "the more the merrier."

Eventually it was agreed that twenty-five boys and not more than that many girls were about the right-sized crowd.

"You see, boys," Uncle Bill explained, "we used to figure that on the average it was best to provide a pound of meat for each person. If we buy the meat by the quarter, we must allow one-third for bone and waste. On the range we would always kill and butcher our beef right at the barbecue ground. But we will have to patronize the butcher in town, so a small hind quarter of about 100 pounds will be all we can possibly handle."

The pit was covered carefully with a piece of heavy canvas and all loaded in the car.

"How about tomorrow?" asked one of the boys before they separated in town. "When do we eat?"

Uncle Bill cocked his head to one side and assumed a judicious air. "We always allowed two hours and a half to each fifty pounds of beef. That means we should take five full hours to cook our meat. I want ten of you boys to meet me at eight o'clock tomorrow morning. We will go out early and get things going. The dinner gong will ring at two o'clock sharp. Bring your girls and your appetites. See you in the morning."

Bright and early the next morning the ten selected boys drove up to Uncle Bill's home. He was all ready to start. At the barbecue grounds he set one group of boys to work unloading the truck, while under his direction the rest built a long table out of the boards brought the day before. This was a fairly simple matter. By selecting three trees in a line and spiking scantlings to each about twenty-six inches from the ground so they stuck out about three feet they had a suitable frame on which to lay the boards. From the truck came six long wooden benches. Meantime, after pouring a gallon of kerosene over the wood in the pit and removing the post which had caused so much curiosity, he dropped a match down the hole thus left and in five minutes the pit was a blazing mass. How the boys laughed when they realized the purport of the post. As the wood settled down they laid on the ground on each side a piece of iron pipe, each about eight feet long. Across the fiery pit four long iron bars were laid, each end resting on the pipe. Finally, on top of these, Uncle Bill laid a steel frame holding heavy wire netting which covered the entire pit.

The more elaborate type of permanent fireplace, barbecue and broiling pits provided for at public camps on many of our National Forests. The arrow points to the barbecue pit.

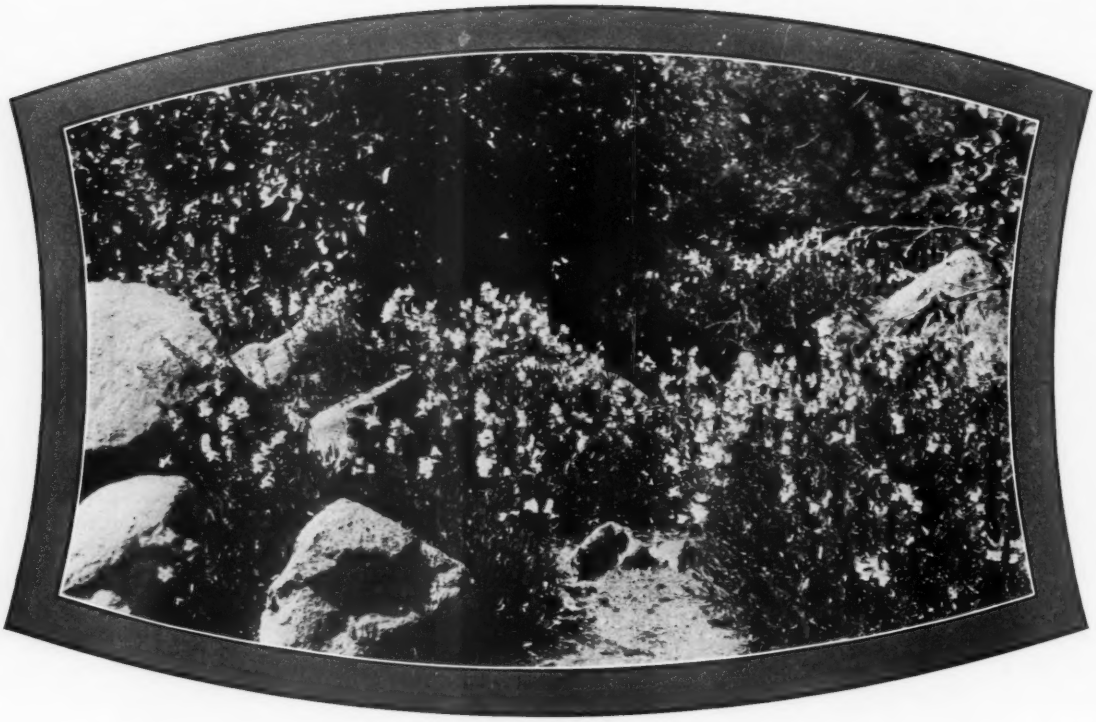
Uncle Bill looked at his watch. It was after nine. "Time to get the meat over the fire," he remarked. From the truck, two of the boys lugged a fine hind quarter of beef. The pit was more than two-thirds full of glowing coals. On the wire netting the beef was laid. At one end was placed a large iron kettle filled with beef tallow. As it warmed up he "basted" the beef from it, using for the purpose a brand-new floor mop with a long handle. Armed with heavy pitchforks borrowed from the farmer, they turned the beef over frequently. Towards the end he drove the four sharp tines of the fork into its very heart. How the rich red juice did ooze from these holes into which the basting material found its way! What an appetizing odor came up from those blazing coals!

At the right time a truck rolled up to camp with "eating tools"—tin plates, cups, knives, forks and spoons. Also there were bread, butter, salt and a whole box of lemons. At one end of the table on a clean bit of canvas a yard square the girls had a wonderful heap of sliced boiled potatoes over which they poured oil and vinegar together with salt, pepper and several pounds of chopped breakfast bacon. Over this they threw five pounds of Bermuda onions chopped into fine bits.

When the beef was done to Uncle Bills's satisfaction it was ten minutes of two. He and two of the boys "pitchforked" the quarter of beef onto a small kitchen table set close to the pit. On the table was a sheet of clean canvas. By setting one end of the table a little higher than the other and fastening up one corner of the canvas for a trough, the rich red juice and basting that ran luxuriously from the beef as Uncle Bill carved it was caught in a bucket.

What a feast they had, those boys and girls! They scorned the butter and instead used the rich gravy caught by the bucket. They cleaned up the potato salad to the last bit.

Then to "taper off on" the boys lugged from a car a huge freezer filled with bricks of ice cream. Before the party broke up the boys buried all the empty cans and bottles. Uncle Bill smiled his approval of their work. "That's right, boys. Always leave a clean camp behind you."



A Natural Mountain Rock Garden Ablaze with the Glory that is Pentstemon.

Pentstemon Loco

By Frank A. Waugh

TWO large and complicated botanical genera, astragalus and pentstemon, are causing more trouble on the western ranges than anything yet diagnosed. Cattle eat sundry species of astragalus and go "loco." Tourists come out and see the pentstemons and go "loco." Bovine or human, "loco" has no known cure.

Up to the present time more attention has been given to astragalus "loco," but the prospects now are that the pentstemon malady will be found much worse. In support of this statement a few field observations are offered.

The alpine flower meadows certainly constitute one of the choicest features of the Cascades, Selkirks and Rocky Mountains, more especially in the northern ranges. The dazzling wealth of flowers is predominantly blue lupines, larkspurs, asters—but conspicuously pentstemons, which are present throughout the season, at all altitudes, from the valleys to the margins of the glaciers, in overwhelming profusion and in endless variety. Most judges would also make the hard decision that they are the most beautiful. Add to all this the known fact that nearly all the species are eligible for use in the alpine rock-gardens, just now all the vogue, and the fits of uncontrollable insanity—"loco"—witnessed every day among tourists are easily explained.

These alpine, or sub-alpine, flower meadows are everywhere. There are literally hundreds of thousands of them. Paradise Valley on Mt. Rainier is quite the most famous of them and in some manner the best, though except for size and setting this pre-eminence could not be easily established. There are just as many pentstemons to the acre on innumerable other meadows, smaller and often unknown. Early last July I climbed to the summit of High Rock, altitude circa 7,000 feet, a small unknown mountain standing between Mt. Hood and Mt. Jefferson in Oregon. The snow still lingered under the escarpment, but the summit blazed with color like a Mexican wedding party. The rose-red pentstemon rupicola was especially noticeable, so much so that we could see its gorgeous rug-like colonies from a mile away. There were many other beautiful flowers in this rock garden, other pentstemons, larkspurs, lupines, aquilegias, eryogonums, calochorti, and more, but even here the pentstemons led. In fact the species rupicola already named was so brilliant that no one could turn his eyes from it. All this on a little four-cylinder mountain, forgotten among thousands. The trip was made in company with an old-time forest officer specially versed in such matters, but who said that in his twenty years of mountaineering he has never seen so fine a showing. To make the case more excessive the mountain was being grazed; we passed a band of sheep at timberline as we went up.

One useful trick in seeing these alpine meadows it to arrive at the same time the flowers do, which is very soon after the snow leaves. There are indeed flowers, many of them and fine ones, from snow-leaving to snow-coming; but the big burst of glory lasts only a few days in

a given area. The tourist's chances are helped by the fact that the flower show moves up the mountain with the recession of the snow, so that one has to climb higher in July than in June, and still higher in August. However, when August comes winter cannot be far behind and the flower meadows know it. The avalanche lilies are all gone long ago, and so are the larkspurs; the lupines have run to seed and even the pentstemons begin to look like last spring's straw hat.

In spite of their wide distribution the conservation of these wild flower gardens begins to seem serious. In those places like Paradise Valley where the tourist traffic is heavy the results of wear are plainly visible. There is great danger that the throngs will tramp out of existence the very beauty they have come to see. This danger is increased by two facts, first that the soil in many of the best areas is very light and dry, second that many of the best species are slow to propagate and sensitive to injury. In every region of tourist concentration, therefore, it will be necessary to take matters in hand. One of the experts has recently given his opinion privately that it will soon be required to maintain these flower shows for the crowds but to surround them with a steel fence, "boy tight, woman high and man strong," to paraphrase a famous scripture.

My own idea is that one way to meet the situation is to spread the traffic out over a much wider area. There are manifest advantages to the flower lover, and even to the wild and "locoed" tourist, in visiting fresh meadows and pastures green, or blue.

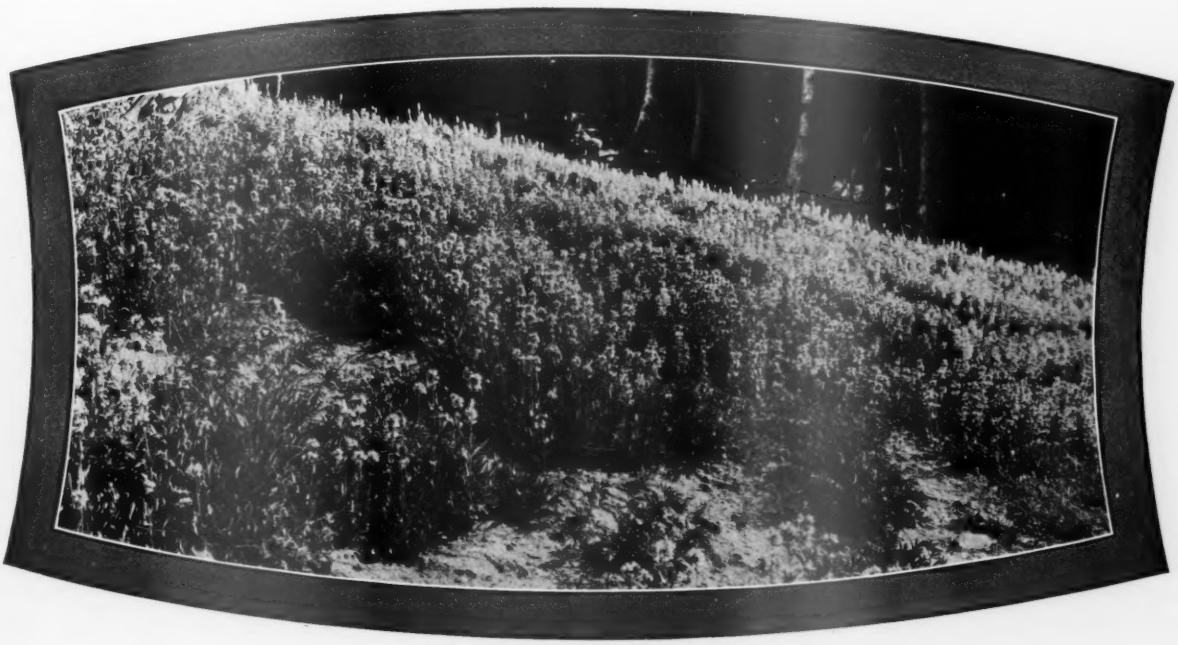
Being myself slightly touched with the pentstemon "loco" I wish I might give the stranger some hint of their great variety and their ravishing beauty. Imagine small dense tufty plants with clustered heads of flowers like small foxgloves in colors of pale blue, sky blue, cyanin blue, the blue of Janet's eyes, dark blue, navy blue, army blue, marine blue, ultra-marine blue, purple, pink, rose, red, or scarlet; and imagine these crowded into dense carpets of two square yards or forty acres; imagine the bright sun of the upper altitudes keying the colors up half an octave in the scale; imagine your own heart beating faster from the climb and your retina freshened from the rest of the forest green below, and think what all this adds up to. Compare it with sitting in a movie theater, the air tainted with cigarettes and civilization, your eyes tired from the flicker of the lights, your mind absent and your body half asleep—and see what that adds up to. Yes, compare the two and you will have some suggestion of how the pentstemon "loco" strikes its happy victims.

At this point I wish I could tell the world—or the world could tell me—something about the multifarious species of pentstemons, their names and diagnostic characters. But I can't. The genus is a large one and sadly bewildered. The botanists have not yet had time and material, or else they have had too much material, to work it all out. The nurserymen are growing and distributing a few of the easier sorts, but they don't always know their names.

I can illustrate this confusion not unfairly by quoting a personal letter from Professor L. H. Bailey. Both of us had dabbled in pentstemons prior to 1899 when he reviewed the genus for his Cyclopedia, then going to its first edition. He wrote:

"I have got to make two new species of Pentstemon to account for your two pictures in A. G., 1892 p. 724. Your Pentstemon cristatus I shall call Pentstemon Waughi because it never existed anywhere else than in Waugh's noddle. The other I shall call Pentstemon Pseudo-Waughi because it never existed at all."

That's how the genus Pentstemon stood thirty years ago, and that's about the way it stands today. Botanically, I mean. Pictorially and inspirationally it stands at the front. There are no doubts or confusions at this point. Go to the alpine meadows in June or July and have a look; but if you do go be sure to take along a large bottle of your strongest "loco" medicine.



A Two-acre Carpet Flaunting the Unforgettable Color of Blue Pentstemons.

—The Arrowhead Association.

We hunted another portage before returning to the domicile of Rattlesnake Bill.

Wild Indian

A Honeymoon in the Quetico

By

CLAY PERRY

SETTLED in our first camp, with a brush bed made upon the rocks of the hard country into which we headed, Billy, the breed guide, told me a cheerful story about a wild, bad Indian who had escaped jail at Fort Frances and was hiding in the Trout Lake country.

Trout Lake—Outakamamoan, the Indians called it—was on our chosen route. "He killed another Indian with an ax," Billy said, in answer to my sleepy inquiries. "The Mounties have been after 'im since he broke jail. He send word down to the reservation he shoot the first tourists that come through Trout Lake."

It was a long, long way to Trout Lake and much might happen to cause us to change our route, which Monty had plotted on the map in red ink to the last mile. I didn't tell Monty Bill's tale, I didn't have to. Billy told it to him, next day, when he learned that Monty was set in his ways, and that Trout Lake was the way he intended to go.

This was Monty's honeymoon. Lolo thought it was hers, too. I hadn't wanted to go on a honeymoon trip. I had wanted to go on a canoe trip into the wild Quetico country of Canada and I had talked about it, unwisely and too well, to a prospective brother-in-law whom I met for the first time in a New York hotel room. He was a brother-in-law now, who had proposed marriage and a canoe trip in the same breath and had been accepted for both. The honeymoon began at Fort Frances and was to last up Rainy Lake to Peak Lake, via the Manitou route, across the Height of Land to the Eagle Rock Route and back to Fort Frances, crossing Trout Lake, on the way down.

Well, we did change our route—but not from Trout Lake. Leaving Ankhakamming, which became the northern limit of the trip because of a six-mile portage to get to Peak Lake and no busses running, we headed into a river which forest fire had choked, blocking passage. We hunted another portage for half a day, then returned to the domicile of Rattlesnake Bill, who lived on the rocks of the Upper Manitou and told trustful tourists tales of lakes and streams they might cross to get to Eagle Rock route. The maps were wrong.

The loons laughed at us as we portaged up to Crooked

Lake and began the crooked journey off the map into the wilderness of the bad, wild Indian.

To be perfectly frank, we did not expect to come out anywhere near Trout Lake. Kennewapekko was our goal. We had been out eight days, made 150 miles and fifteen portages varying from a carryover to a mile. We had borne on our heads and shoulders two heavy Peteboro canoes which Monty had chosen without consulting me or the guide. Likewise other impediments, among which I recall two dozen tin cans with sharp edges, but which did not include any weapon other than a dull ax.

We had paddled weary miles in big waters, risking waves four feet high, shipping water often. We had driven black bears from their feeding places to camp upon them. We had shivered when wolves howled on far ridges at night. We had inspected an abandoned gold mine, traded lake trout for "government mutton" which the lonely woods-rat who lived there kept in an ice-cold shaft. We had camped in the crossroads of a game park on a lake called both Uphill and Moonshine. We had seen there on the sand the tracks of a timber wolf with water just seeping into them. And we had partaken of Mrs. Rattlesnake Bill's homemade rhubarb wine and of Mr. Bill's flow of language. And we believed him when he told us of an unmapped route to Eagle Rock. Squirrel, the wild Indian who broke jail, had a feast coming to him.

"Go to the east end of Crooked Lake," Bill told us, "enter a creek, and portage on the left side, one quarter mile long, into next creek." And on he talked, taking us, in imagination, through three lakes which the map Monty dearly cherished—and his mining map—did not show at all.

Rattlesnake Bill was seventy years old. He had lived for fifty years in the Manitou wilderness. He knew the streets and alleys of this playground of the Red Gods. When he told us to "turn right" or "go straight" perhaps he saw the water trail clearly. We didn't. But we believed what he told us—disbelieved our maps.

The lakes he said were there were not. The consequence was that we were lost.

"I like to see you boys lookin' at your maps," Billy said. "It's easy to get lost in here without 'em. The time I was lost I came out three times on the shore of a lake I knew, but I didn't know it then."

It was easy to get lost with the maps, but not so easy to get to the places where we got lost. My diary shows that we made two more portages between Crooked Lake and what we called Moose Lake than Rattlesnake Bill's directions called for. One of them was 615 paces straight up. A lake was at the end of it.

"Moose Lake?" I inquired of Billy.

"I dunno. I hope so."

We were fagged. Lolo, who insisted on doing more than her share of paddling and of carrying the little extras such as cameras, fishpoles, sweaters, cups, caps, spectacles and toilet bags, was beginning to weaken. She wouldn't admit it. My spirit—and also my neck—were almost broken from carrying the smaller canoe up that half-mile portage.

"Many a poor breed has been crippled by one of these straps," said Billy, one evening as he sat and fussed with a stiff, leather tumpline.

We called it Moose Lake because it looked like it.

—E. C. Oberholtzer.

A moose looked surprised as we passed.

Moose trails led through muskeg and tamarack to the watery feeding grounds, and nowhere else, and moose looked surprised as we passed. The next one we called Round Lake because it looked that way.

There was no portage. We paddled smack up against the end of the world. It was a tall, timbered cliff with no opening in it. The portage should be there. Billy thought it was a shortcut over the Height of Land. We climbed to the summit with map and compass, stood on top of the world and looked over the wrinkles in stone which made up the landscape. The streets ran in all directions. They were deep-cut rock ruts worn by the passage of the chariots of the Red Gods as they thundered down out of the northwest. You could look all around and see everything—and nothing. Billy pointed eastward.

"That way we want to go," he said, sagely.

Of course we did! But how? I looked at Billy. "You're the guide," I reminded him. "From now on what you say goes. I'm going to hide the maps from Monty. If necessary, I'll eat 'em. You lead—and God bless you."

Billy said about the same prayer over the memory of Rattlesnake Bill.

"He's the biggest liar in Canada," he declared.

"Well, I don't know," I remarked ambiguously, trying to patch the knee of my pants with a thorn, "Monty said you were a guide."

Billy had a sense of humor. It was, perhaps, lucky for me. If he had just pushed me a little I'd have fallen over the edge of the cliff. I was presuming upon the tradition that a licensed guide is supposed, always, to bring back his party alive.

—E. C. Oberholtzer.

We tore Billy away from the broiling bacon.

It rained. It blew. As we lay down in our brush bed that night, lost in the heart of a howling wilderness, the howl of the wolves could not be entirely ignored. I looked casually about for the ax. It had bitten deeply into the rocky ribs of the Quetico and I wanted to sharpen it—to cut kindling.

"If you hear them 'ulves howl close by," said Billy, "get up and climb a tree. They'll always howl before they rush."

He meant it. He slept, surreptitiously, with an open clasp knife in his hand. I believe Lolo slept. Monty did. He thought they were coyotes.

The Canadian government protects its pet animals from blood-thirsty American tourists by forbidding the carrying of firearms in touring season. But then they had no maps to show that this country was here, anyway. Theoretically it wasn't, and there were no wolves.

We rushed the blind end of a bay next morning and found an empty watercourse which offered a sort of a trail out to somewhere eastward. We left Lolo carefully concealed in a thicket—with the ax—and the three of us men took the smaller canoe and pushed up the dry river. We came to a wet river. It flowed south. All was wrong with the world, for we were heading for Kennewapekko—and the waters were supposed to flow north. We portaged 700 paces more and paddled three miles and came to another river which also flowed south.

"This looks like the main route," said Billy.

The street ran the wrong way but there were trappers' signs such as three stones sitting on a rock ledge. But we were lost yet—and again. There was a new thrill and a new chill in the situation. In all this rocky, muskeg country there was nothing we could take for food save porcupines and fish—if we could get fish. We landed on a point. Monty ran ashore and chased a black bear away. I picked up a wolf skull and did dentistry on his teeth for souvenirs. We turned back and got Lolo. Before night Monty paddled down the river and came back, reporting a falls and that he could line the canoes down. He studied the map. I hadn't hid it successfully.

We began to husband our resources. We baked beans in the reflector oven so as to save those nice heavy tin cans of stuff that had sharp edges. We fought frost and mosquitoes at the same time. We told ourselves wolves wouldn't swim the swift waters and built a big fire. We slept on moss-covered rocks. We had given up brush beds long since. We had given up everything—fishing, fooling, resting. We lived on memories and hope.

Two days later after climbing other cliffs and carrying over on moose trails we paddled into a lake and headed, in the face of a cold rain, for an island which had warm colors all over it. It had been burned over so recently that the cedars and spruces were red of foliage.

We picked up a broken paddle; we found a hammer and traps on a tree, the remnant of a half-melted lamp chimney and a card of matches labeled "Waldorf Astoria, New York." It must have been (*Continuing on page* 596)

EDITORIALS

Warns Smokers

RESPONDING to the suggestion of The American Forestry Association that tobacco companies should take an active part in the nation-wide effort to curb forest fires by cautioning smokers against the danger attendant upon the use of tobacco in the woods, the American Tobacco Company, on August 2, devoted a portion of its radio hour to warning smokers against carelessness with matches and cigarettes in the woods. The message which went out over a national hookup and which thus reached millions of people throughout the nation was as follows:

"A hike through the woods and the enjoyment of a cigarette—how perfectly they go together. There is too much enjoyment in a cigarette to let it be the cause of danger or destruction. In the interest of our forests and woodlands and in cooperation with state and national authorities, the American Tobacco Company broadcasts these two simple rules for vacation time, or whenever you are in the woods: (1) Be sure you put out your match before you throw it away—and that your campfire is out before you leave it. (2) Be sure your cigarette is extinguished to the very last spark before you discard it. Do not let carelessness turn into a danger the cigarette you enjoy so much."

The company has given assurance that further warnings will be broadcast from time to time as a measure of helpfulness in making smokers forest fire conscious. In view of the widespread drought and the forest-fire hazards prevailing over most of the country, the warning issued by the American Tobacco Company was most timely. Progress in curbing the forest-fire menace rests primarily upon educating the American people to be careful with fire in the woods. The radio is one of the most powerful educational mediums for reaching the people, and the response of the American Tobacco Company by making use of this medium in helping to fight the common enemy—forest fire, is a public service that will be appreciated by all who love the forests. It is now up to other tobacco companies to follow the example set and seize every opportunity within their means to impress upon smokers the imperative need of exercising care and common sense in the use of tobacco and matches in the woods and on the open road.

The Shipstead-Nolan Act

RUMBLINGS are coming down from the north country to the effect that the Shipstead-Nolan law doesn't amount to anything. It sounds a good deal like "sour grapes" for one who opposed the bill so long and vigorously as did Mr. E. W. Backus, of International Falls, Minnesota, to express contempt for that which was passed in spite of his efforts.

Mr. Backus is reported by the *Minneapolis Journal* to have said that the Shipstead-Nolan law will have no more effect upon his plans than as if it had never been passed. He bases this opinion upon his interpretation of an amendment proposed by the State Department and adopted by Congress. This provides that nothing in the law shall interfere with the duties of the International Commission, which was created according to the convention concerning boundary waters between the United States and Canada of January 11, 1909. The amendment also refers to a later convention between the United States and Canada regulating the levels of the Lake of the Woods, with which the International Joint Commission deals.

Before accepting the criticism it would seem desirable to review the law, its objectives, and the functions of the International Joint Commission. The law is reasonably brief and sets forth clearly three major things which it would accomplish. First, it withdraws from entry all public lands within a definitely described area in northern Minnesota adjacent to Canada, comprising about two million acres; second, it prevents logging on all public lands within the area for a distance of 400 feet back from the shoreline of lakes and rivers which are now or eventually will be in general use for boat or canoe travel; and third, it places upon Congress the responsibility for authorizing any structures which will permanently change the water level of any lakes or streams within the area and bordering upon public lands.

It is clearly stated in the law, as was brought out in the discussion on the floor of the House of Representatives by Representative Leavitt, "that before permits can be granted to do any more than construct strictly temporary dams, necessary for legitimate logging operations, the Congress itself

must act. It takes away from the Water Power Commission or any other agency of this nation the right to grant such permits as would allow the permanent raising of those water levels to the destruction of the shoreline until the Congress itself acts in the matter, and decides itself what thing should be done in the public interest."

The law neither adds nor detracts from the powers and duties of the International Joint Commission. It will continue to advise with regard to the border lakes, but it cannot dictate to its governments. The commissioners have repeatedly informed complainants against existing conditions on Rainy Lake that they are powerless to regulate the levels of the border lakes. The Shipstead-Nolan law would appear to clarify and make specific their instruction from the United States Government. In declaring a public policy of conservation, Congress has made clear that no final authority shall be granted any Federal agency without its consent. In so doing, Congress has spoken for the people of the United States. There is small room for question in the minds of any as to the desirability of keeping the northern lakes country open and undefiled for recreation. If Canada will pass legislation similar to the Shipstead-Nolan bill, the way will have been cleared for the establishment of a great international playground in the Superior-Quetico country.

Birds and the Farmer

THE findings of the Central States Forest Experiment Station at Columbus, Ohio, as given by Mr. Ralph K. Day in his article "Grazing Out the Birds," printed elsewhere in this issue, will come somewhat as a shock to those wrestling with our many farm problems. Misuse of farm woodlots, the experiment station finds, is speeding the departure if not the extermination of birds most valuable in preying upon the farmers' enemy—insect pests.

In the Corn Belt and other extensively cultivated regions of the Central States, the experiment station has found that the farm woodlots are the birds' main hope of perpetuating themselves since practically all the rest of the land is tilled or in pastures. The woodlot alone offers sanctuary and natural breeding habitat for bird life, provided the woods are kept attractive to birds. Unfortunately this is just what the average farmer is not doing. Ninety per cent of the woodlots in the Corn Belt country, it is revealed, are used for grazing and are so heavily grazed as to make them unfit and unattractive for birds. According to Mr. Day, more than half the bird life of the woodlot nest on the ground or in the undergrowth of the woods, and this half includes practically all the insectivorous species important to the farmer and fruit grower. Heavy grazing as practiced by most farmers is thus destroying the nesting and breeding places of birds most important to him. Elimination of the undergrowth in the woodlots is likewise destroying an important source of food for birds.

The findings of the experiment station are of tremendous importance and significance not only to the farmer but to the farm states and to the nation. Millions of dollars are spent every year to fight insects preying upon farm crops. The practice of overgrazing woodlands in the Central States and thereby exterminating bird life is simply encouraging the insect hordes and making the problem of crop production more difficult, hazardous and expensive. In times of drought the insect hazard is raised to a high degree, but with bird life lacking it becomes a menace of national potentialities.

It is to be hoped that the facts and conditions revealed by the study in question will be seized upon by agricultural agencies in the states concerned and by the Federal Government to the end that the farmer may be made to realize that abuse of his woodlots contributes to his farm problems.

Russian Wood

WOOD from Russia vied with heat and drought for headline space in the press last month. The Russian flurry was generated by the Treasury Department placing an embargo upon several cargoes of pulpwood from Archangel consigned to three large pulpwood companies in this country. The embargo was based upon the assertion of the government that the wood was a product of convict labor and therefore barred by the Tariff Act. The action of the government was contested by the companies concerned and the Russian wood was permitted to enter the United States.

There are a number of interesting things about this Russian wood. The spruce from which it was cut, it is said, grows in the interior of Russia, and the pulpwood is conveyed by river driving a hundred miles or more before it reaches the ships at Archangel. These pulpwood sticks are carefully peeled and trimmed by hand labor with draw knives. The pulp companies claim that the Russian wood gives a higher yield of pulp than spruce from this country or Canada. But still more interesting is the assertion that the pulpwood is cut from the tops and limbs of trees whose trunks are utilized for lumber. If this is true, Russia is utilizing portions of her trees which in this country are left in the woods as waste and is laying it down in this country in competition with our own supply.

The question arises at once how can Russia transport limb wood to this country and sell it at prices comparable to those prevailing for domestic and Canadian pulpwood? The pulp manufacturer asserts that while the Russia wood costs approximately two dollars more a cord than domestic pulpwood, the difference is more than offset by the higher pulp yield of the former. Hundreds of thousands of cords of limb wood are left in our woods to rot every year on the claim that it cannot be removed at a profit. Russia's competition with limb wood is not a favorable commentary upon wood utilization in this country, and it ought at least to prompt a concerted study on the part of industry and the government of what can be done to make our own wood, now wasted, attractive to the paper manufacturer.

In Defense of Chickaree

Is the Red Squirrel, Noisy and Boastful, a Destroyer?

By Don Cameron Shafer

"WHY don't you shoot those reds?" asked my visitor as he watched a couple of squirrels chasing each other through the tree tops.

"What for?" I asked, knowing well enough what the answer would be.

"They rob bird nests."

"Did you ever see a red squirrel rob a bird's nest?"

"No," he admitted, "but I have heard—"

Yes, I know exactly what he had heard—nothing more or less than malicious slander about an innocent and interesting little creature of the trees. I don't want to go on record as saying that the red squirrel never robbed a bird's nest; but I do say that even greater lies have been told about this inoffensive and amusing little animal. My observation has been after years of intimate acquaintance, that the red squirrel does not rob birds' nests habitually, if at all. I do not believe he is any more guilty in this respect than his big cousin, the gray squirrel. Very probably both, or any other squirrel, would eat bird's eggs if hungry enough.

I know of no more interesting bit of wild life than the red squirrel in winter. Even as I write these lines a pair of them are racing over the white snow before my window, dashing up and down the big maple trees in front of the house. There are no birds' nests to rob—Nor are they hungry. On the west side of the house grow two very large, black walnut trees. Last fall the red squirrels harvested the nut crop, hiding them all over the place. And when they tired of this they collected the extra nuts, piling them against the base of each tree where they would be handy to get at in the winter. So now, in February, when there is two feet of snow on the ground, I can look out almost any time and see a red squirrel scampering over the tree roads with a black walnut in his mouth. And when I step out doors I hear the familiar gnawing sound of a squirrel's sharp, chisel teeth working through the thick, hard shell of one of these nuts. When summer comes these same squirrels will be scampering over the lawns, up and down the trees, coming on the porch and even into the house. By May there will be young ones in the hollow-tree nests—tiny little fellows that need to be nursed like little pigs and then fed on the daintiest fare, carefully selected and brought to them by the parents. If you want to appreciate these squirrels, know the young ones.

Once I tamed a whole family of red squirrels and they were as interesting and lovable as gray squirrels. Last summer some misguided mortal over in the village shot a mother squirrel and a few days later three half famished little squirrels crawled out of their nest. A young man brought them to me. They were about one-third grown, had their full color and markings, and were tame. For a day or two they sucked milk from a rag, but soon learned to eat nut kernels and bits of bread. Later they ran with the wild squirrels.

Perhaps one of these little fellows is the squirrel that sits on the porch rail near the dining-room window with his back against a post, bushy red tail cocked up, and little black hands folded close to white breast. Unafraid, he watches me with round dark eyes, twitches his delicate nose, and wriggles his whiskers if I come close.

My place is forbidden to cats. Birds seem to know this as well as the squirrels although they do not mind the presence of my hunting bird dog. Every summer, despite two or three families of red squirrels, there are many birds' nests on

the place. Last summer, for instance, there was a robin's nest on the side porch behind the water spout. There was another on the dining-room porch and still another on the front porch. Several other robins' nests were scattered about in the trees. There was also a happy wren family occupying a bird box on the side porch, and a family of bluebirds in the log-cabin bird house atop a pole in the yard. In the shade trees were nests of flickers, nuthatches, chickadees, chipping sparrows, goldfinches, orioles, warblers and many others.

With all these birds nesting near the house, right in the same community with half a dozen mischievous red squirrels, not once did a chickaree disturb a nest. But I did see an occasional red squirrel happen along the tree lanes near a bird's nest, to be driven away each time by the parent bird. They never fought back. Even the little house wren could put to instant flight the largest red squirrel.

Chickaree is noisy and boastful but at heart is a timid creature. I never have seen them fight among themselves. They will bite viciously if you try to pick them up, but otherwise they are not belligerent or combative. The vireos had a nest last summer in one of the big maples used by the squirrels to get upon the house. The nest was close to this natural runway and yet the squirrels never bothered it. The vireos, being more or less wood birds, and therefore perhaps more familiar with squirrels, did not seem to mind the reds or pay any attention to them.

There may be, here and there, a red squirrel with a depraved appetite, eating eggs and killing nestlings. I do not say there isn't. Such creatures should be destroyed—but I should try feeding them first. I know that here, where there is always an abundance of feed, squirrels never bother the birds' nests. They are knowing little beggars. Time and again I have watched red squirrels with a sweet tooth drinking sap. There is a small limb, very near my window, where the squirrels have gnawed the bark every spring to make the sap flow. As the sap evaporates in the sun it grows very sweet and delicious to Chickaree's little red tongue.

The red squirrel will live where the gray will not. Reddie is not so shy and wild and seems to fear man less than his gray brother. Perhaps this is because the grays are considered fair game and hunted every fall. But it is also true that gray squirrels require more trees, and better cover, while Chickaree will live in the naked maple and apple trees about the house, or will even take up residence in the house itself, the barn or the garage.

They do not make summer nests of leaves as the gray squirrels do. Late in the summer Chickaree begins to build a real nest He will unravel rugs, steal yarn and string, chew up blankets, burlap bags, anything to get nice, large balls of fluffy wool, which he carries away, piece by piece, to the place selected for the nest.

I have noticed another peculiar thing about red squirrels. As the snow gets deeper they make long tunnels beneath it from tree to tree. Whether or not this is for safety or convenience I do not know, but I have explored their tunnels time and again. Down in the lower field there are two butternut trees, sixty feet apart. Every winter of deep snow these trees are connected by a maze of snow tunnels that reach out to every store of food hidden in the ground, about the trees, under rocks and stones and in old stumps. Whether gray squirrels make such tunnels or not I cannot say, but if they do I have not noticed them in my wanderings in the woods during the winter..

If one looks closely and becomes better acquainted with individuals he will note a difference in the red squirrels, although they apparently look alike, regardless of sex. But there is always some slight variation in their coat and colorings. One year we had a very friendly squirrel which had a white tail. Once I saw a small squirrel that was all black, tinged a bit with red, killed by a hunter.

Probably the most malicious slander ever invented about any animal is the oft-repeated statement that red squirrels will drive away gray squirrels. They will quarrel around a favorite nut tree, but the idea that a red squirrel will chase a gray squirrel out of the woods is ridiculous. If this were the extent of the damage it wouldn't be so bad, but a great many hunters shoot the little red squirrels, too small to eat, solely because they believe they actually destroy the grays.

Dixie Crusaders Enter South Carolina

Extension of the Southern Forestry Educational Project to include South Carolina through 1930 and 1931 has been announced by the American Forestry Association and the South Carolina Commission of Forestry. The Project, which has for its major purpose the dissemination of knowledge, particularly among school children, to the end of implanting in the minds of the people a changed attitude toward burning the woods, was inaugurated in Georgia, Florida and Mississippi in 1928 by the American Forestry Association and cooperating forest agencies of the three states.

In extending the educational work to include South Carolina the Association will contribute $10,000 and the South Carolina Commission of Forestry and other agencies and individuals in the State will provide $6,500. Three trucks similar to those used in the other states will be used. The work will be under the direction of W. C. McCormick, regional director in charge of the Project.

The practice of burning the woods prevails throughout South Carolina and in 1929 more than 3,000 forest fires burned over 5,000,000 acres, causing a loss of $10,000,000. Ninety-nine percent of these fires were preventable.

Rising from the placid waters, the cypress "grove" stands in dignity.

A "close-up"—showing the symmetrical folded buttresses, trimmed with moss.

Below the Cypress Waterline

By Herman Kurz

DURING 1927 and the early part of 1928 northern Florida experienced an unusual drought. So dry was the country that one could explore dry-footed among trees of the cypress ponds normally approached only by boat. One could see cypress buttresses towering aloft like enormous coca cola bottles from the parched bottoms of waterless ponds. In many cases the bottle forms, which are obviously related to a prevailingly high-water level during the growing season, were from twelve to fourteen feet high.

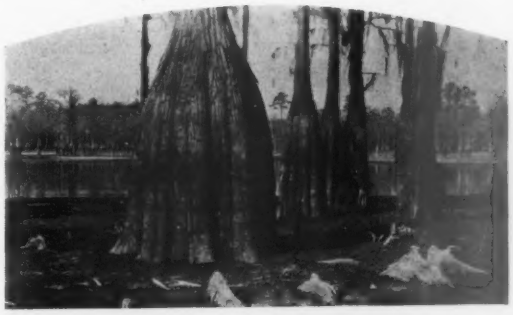
Since there is such an intimate relationship between cypress and water it is interesting to consider a rather unique manner in which the ponds in Florida are filled and drained. They dry up slowly but may be filled almost completely in a few days, due chiefly to an elaborate system of underground reservoirs and waterways.

Near view of a Coca Cola bottle.

The winter of 1928 the floor of the "Cascades" in northern Florida was dry on February 28, and it was possible to explore the strange bottle buttresses of the cypress there without getting one's feet muddy or damp. Three days later people found to their amazement that this pond was running over with water and the bottle buttresses of the cypress were completely inundated, notwithstanding the fact that there had been no rain for ten days. The only surface water running into the Cascades came by the way of Eenan Creek, a stream about ten miles long and totally incapable of filling the pond in such a short time.

The solution to this sudden rise of water is to be attributed to an elaborate underground system of drainage and reservoirs. These systems, not unusual in Florida, feed or drain cypress ponds from below, depending on rainfall and the many unknown and unexpected actions of hidden waterways, such as clogging with detritus or the breaking through of new outlets.

There are many interesting features to be observed when some strange action of the underground systems carries away the water in these ponds, leaving the enormous "bottles" uncovered. There are masses of fine adventitious roots which often clothe the normally submerged buttresses or protrude upward from the larger soil roots. Here and there one sees a "fairy ring" of more or less gently arching knees girdling the base of the trees. Where the water is prevailingly shallow, symmetrical disks of sphagnum often surround the trees at the base. These mats are peppered with cypress seedlings, while the adjacent Juncus mats are conspicuous by the absence of seedlings.



Loon Lake, near Tallahassee, with its "fairy ring" of cypress knees.

It is almost impossible ordinarily to study the significance of these rare features because of the usual high-water condition of the cypress ponds.

Putting The Rustic in Furniture

A Swedish Immigrant Utilizes Burls, Worm-Carved Timber and Unique Tree Growths in Furnishing Forest Homes

By B. L. Brown

BURLS, timber killed by wood-boring worms, freak forest growths, fantastic cross-sections of trees and petrified wood are finding a very definite and picturesque place in the furnishing of the new American home. Considered in the past as novelties to give the yard, porch, or den a unique forest flavor, these curios of the timberland are today the essence of interior rustic beautification and are among the most valuable of the forest products.

To Tosten Stenberg, a Swedish immigrant, goes the honor of having created and developed this one-time hobby which has spread with such amazing rapidity throughout certain wooded regions of the country, particularly among the dude ranches in the West. He began by furnishing a ranch house in Montana where he was employed, and today he not only operates his own dude ranch near Livingston, Montana, but is engaged in furnishing other ranches, hotels and homes with unique tables, chairs, bedsteads, smoking stands, lamps, candle-holders, and other pieces made from the freaks of the forest.

Tosten Stenberg, Swedish immigrant, now a Montana dude rancher and wood carver, at work

Years ago, Tosten Stenberg, from his home in Sweden, set out to seek his fortune in the new promised land to the west—America. Born and raised in the great forested region of his native land, it is said that this husky young man brought his favorite ax with him to America. Be that as it may, the following year found him in Montana. He arrived there when logging operations were at a standstill and found

employment on a cattle ranch. Stenberg was not a horseman and knew little of livestock and the range, so his employer, quick to recognize his skill with an ax and his love of using it, set him to work hewing logs for a new barn.

Almost immediately the Swedish immigrant made his mark. Selecting his logs with great care from the forest that flourished nearby, he put all of his natural talent and training into his work. The result was startling. The rather bleak landscape about the ranch was given new life, and right away Stenberg was given the task of completing the work of rustic beautification. He began with the house. First he marked his trees and then set to work planning a log cabin. He cut his timber in the right season, allowed it to weather and the sapwood to color to his taste, and always kept a keen eye for odd knots and growths that would make door knobs and other cabin fixtures.

The completed cabin was a masterpiece, but the talented woodsman was not satisfied. To his mind the furnishings should be in keeping with the building. So he once more went into the woods, this time selecting his timber with greater care and weathering and coloring it with all of the skill that was his. Then Stenberg went to work with ax, file and other handy tools. From his labors there evolved tables and chairs, book-cases, stools, picture frames, candlesticks, smoking stands, bedsteads and many other unique and useful articles of furniture made almost entirely from burls, sapwood artistically carved by little wood-boring worms, and freak tree growths. It was a job requiring patience and unusual skill, but Tosten Stenberg pursued his self-appointed task with the ease that comes only through an intimate knowledge of wood and an inborn love for the forest. Often it required months to find the right material and he devoted weeks to coloring and polishing it.

Thus came about the new kind of American home. Today they are found throughout the West in abundance and may be enjoyed by the traveler at dude ranches and hotels. Many of these ranches have been built entirely of material gathered from the forests and in many cases the furniture from the kitchen to the bedroom has been made from the raw products the forests provide. Stenberg, the master, has passed on his art to others, showing them how to select, cut, color, and assemble the necessary wood. Particularly did he show them how to make attractive pieces of furniture from dead timber; he uncovered his trick of utilizing wood fantastically carved by worms; he showed them where and how to look for such wood, how to cut and fit it, how it was oiled and finished to retain the grain and natural color of the wood.

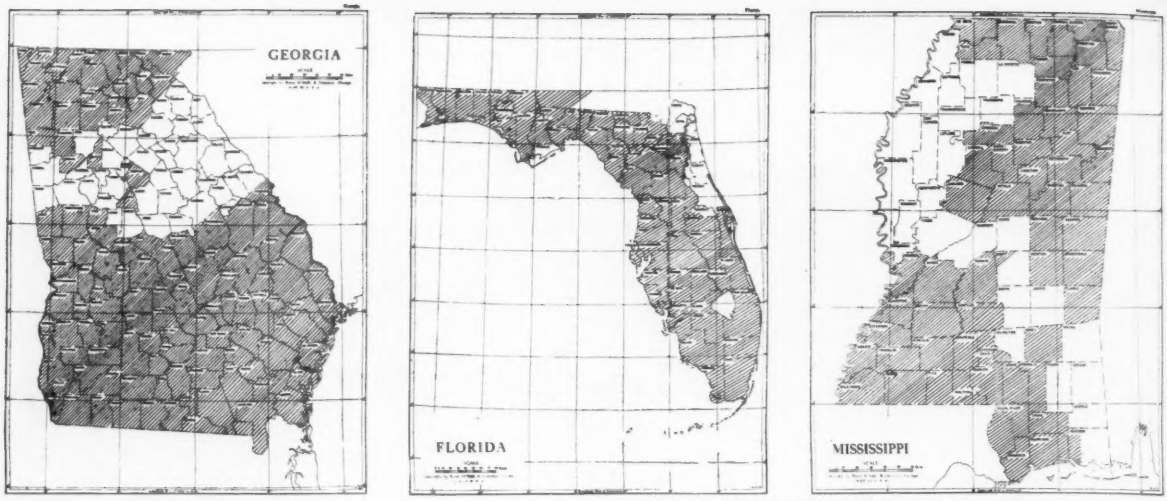
The furniture in this dude-ranch bedroom was made by Tosten Stenberg. A very rustic appearance, yet everything is clean and comfortable as well as practical.

Remarkable furnishing of a dude-ranch living room. The center table and chair were made from large pieces of burl and from Western larch and tamarack. This burl, polished, makes a beautiful piece of furniture.

From Stenberg others learned to make various pieces from odd-shaped knots; they learned to make clothes-hangers from artistic branches of the trees; they even found the way to make furniture without the use of nails or screws, using wood pegs.

Today Tosten Stenberg has his own rustic dude ranch and his art expressed in the wood furnishings is a delight to all fortunate enough to see it. He has always been willing to assist fellow ranchers and others in this unusual use of the forests.

"A handy man, or even a woman, turned loose in the forest with an ax and the necessary tools and a little patience and determination can equip a home with very artistic furnishings," he says. "Beautiful tables can be made if the right burl is found and treated; chairs can be fashioned with very little effort if the proper pieces of birch or other woods are shaped naturally for the purpose; a smoking stand can be made from a single piece of wood; chair seats can be made from cross-sections of trees which, if painted a bright color, will give unusual life to the room. And the fireplace must not be overlooked for it is a very important item in rustic beautification. If obtainable, petrified trees will make a picturesque and unique fireplace, as will lava rock, so abundant in the Northwest."



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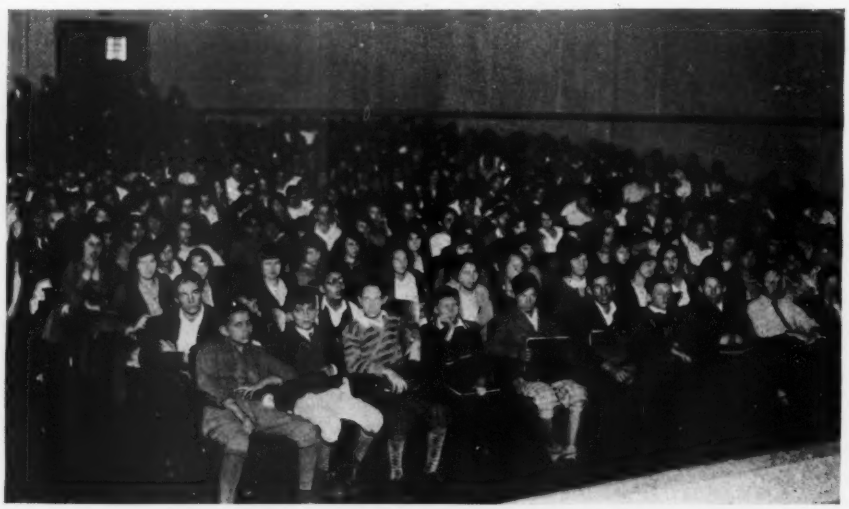
Two years of the Southern Forestry Educational Project in Georgia, Florida and Mississippi. Shaded portions of maps show the counties covered by the educational units.

Two Years With the Dixie Crusaders

The Southern Forestry Educational Project Achieving Its Purpose

SWINGING into its third and final year the Southern Forestry Educational Project initiated by The American Forestry Association in cooperation with forest agencies in Florida, Georgia and Mississippi has achieved to a marked degree its purpose of implanting in the minds of the people a new attitude toward woods burning, and the use of the forest as an opportunity to better living conditions.

During the two years the Dixie Crusaders have been campaigning against forest fires in the three states, 1,795,310 people, one-half of them school children, have attended motion picture programs and lectures. More than 5,200 programs have been given, for the most part in the rural districts where the practice of woods burning prevails. The number of pieces of fire-prevention literature distributed totals 618,539, while 609,584 rulers, book-covers, posters and other kinds of educational matter have been distributed. In carrying out their work the Crusaders have pushed their sturdy and well-equipped trucks over 190,169 miles.



More than half a million school children have been reached by motion pictures and lectures in Florida, Georgia and Mississippi given by the Southern Forestry Educational Project during the past two years.

While it is impossible to measure tangible results at this time the fact that the Project is having a tremendous influence in bringing about a changed attitude toward woods burning is evidenced in the many letters received by The American Forestry Association from teachers, parents and the children themselves. Hundreds have come in from every portion of the three states pledging the writers to the cause of the forests. Too, the various state organizations charged with forest administration and management in Florida, Georgia and Mississippi have reported a marked increase in individual and collective cooperation among the rural people toward fire prevention, and, particularly in Florida, additional funds have been

made available for the extension of forestry work, for the most part along educational lines.

Practically every rural school and many city schools in all but seven counties in Florida have been visited by the Crusaders who have given 1,613 motion picture shows and lectures to 256,060 people, of whom 150,000 were children. At state fairs where exhibits were given and motion pictures shown 736,552 people were reached. In Georgia 2,000 motion picture programs and lectures were given to 318,672 people, 220,000 of whom were children. In addition 44,215 people viewed exhibits and programs at state fairs. In Mississippi 1,727 motion picture programs were given to 242,273 people. Of these 175,000 were children. Exhibits at fairs were viewed by 148,338 people.

A scene during the filming of *Dannie Boom*, produced in 1930 by the Southern Forestry Educational Project.

In the three states, fifty-four essay contests have been arranged in the rural schools and 119 window displays depicting the damage of woods burning have been put up. Special programs and exhibits and field demonstrations have been given in forty-eight camps of Boy and Girl Scouts, 4-H Clubs and others. Nearly 6,500 children have been reached in this manner.

To supplement the motion picture *Pardners* made in 1929 by the project staff another motion picture entitled *Danny Boom* was made in the spring of 1930. This picture is designed to emphasize the destruction of wild life in the piney woods by fire and shows the menace of the "game hog." Since it is to be used chiefly in the rural schools it was produced, as was *Pardners,* to serve the juvenile interest.

Another feature of the past year was the 5,000-mile tour of the special exhibit truck of the Project. This unit, made possible by funds supplied by the Florida Forest Service, is equipped with novel electrical displays as well as motion pictures and was designed to exhibit at state fairs and other events where large numbers of people gather. One of its features is a great amplifying system through which the voice and music can be heard nearly a mile away. On its 5,000-mile tour of twenty states in the South, East, Middle West and Lake States, the unit was on display at the annual meeting of The American Forestry Association, at Minneapolis, the Southern Forestry Congress, at Memphis, the annual meeting of the Izaak Walton League of America, at Chicago, and a number of lesser meetings. It is estimated that more than 1,000,000 people saw it exhibit on the tour.

Crowds in Williams Park, St. Petersburg, Florida, viewing forestry exhibits displayed by one of the Project's trucks.

As in the beginning of the Project in 1928, no school is too small or too remote for the Crusaders to reach; no roads are too bad for the trucks to travel. Day in, day out, from early morning until midnight the Crusaders keep at their self-appointed task, lecturing and showing their motion pictures before large crowds, black and white, in high school auditoriums and in one-teacher negro schools, before women's clubs and in the turpentine camps. By the end of the project in 1931 practically every rural school will have been visited and the seed of forest protection will have found root in the hearts of thousands of adults.

Trailing Incendiaries

By Paul H. Roberts

THE fire season on the Buckskin District of the Sacramento National Forest seemed to be dragging out to an uneventful close. No fires had been reported for several days. Ranger Frank McVey, dark-haired, slightly gray at the temples, and veteran of many fire seasons, was relaxing. Without warning the telephone on the wall in his office jangled out. From long experience he knew the call was from the lookout at Bear Springs. "Now what is it?" he muttered wearily as he reached for the receiver.

He was soon to know.

"Smoke on 201, near Haught Tank—and it's pickin' up," the lookout reported. "I'm gone," McVey snapped.

"Hey!" yelled the lookout before McVey could hang up. "There's another one—there's two more."

As he grabbed his hat and jumper and ran to his car, already loaded with tools and chuck, the ranger swiftly reviewed the situation. No lightning for over a week, and three fires in about the same location. The fires must be man-caused—incendiary.

Driving rapidly to the local store he picked up two men. The lookout, he knew, would send out the smoke chaser at Bear Springs, and as many men from a Forest Service road crew working near by as he considered necessary.

The man looked directly at McVey. "We rode where Turpie said we did."

McVey found six separate fires burning over an area of about five acres. His experienced eye took in the situation almost at a glance. An arroyo on the west and north, wind from the southwest. The fire was burning briskly on the east and north, slowly on the south. The fire guard soon arrived and immediately after him three men from the road crew. McVey set the fire guard and the three men to clearing a line a few feet back from the edge of the fire and along the east side. These men were to work north until they reached the arroyo. The other two men set out on a line around the south side of the fire.

Knowing that his men would quickly have the fires under control, McVey started a rapid and systematic search for clues. The fires were near an earth reservoir, constructed for stock watering purposes and known locally as Haught Tank. A dense stand of young pines five to ten feet high covered the surrounding area for a quarter of a mile in all directions. Working swiftly, his keen eyes taking in every detail which might lead to a clue, McVey skirted the edge of the fire. He was anxious to go over the area before fire destroyed any evidence. Not a clue rewarded his search. It soon became dark and further investigation was necessarily postponed until morning.

The fires, which had all burned together, were under control. After supper McVey appointed two men to night patrol and secured the services of two more for the following day. He then rolled wearily into his bed.

Arising at the first hint of day the ranger walked around the fire to see that it was safe. Only a few scattered logs were burning. So after breakfast he again took up the search for clues.

McVey's reputation as a crack woodsman was known far and wide and on several occasions his ability as a tracker, together with a natural aptitude for unearthing and analyzing evidence, had been a deciding factor in bringing law violators to justice. Not only was it his duty, as a forest ranger, to extend every effort to apprehend the offenders, but he took pride in his craftsmanship.

Due to the rocky ground which rendered tracking an exceedingly difficult process and to the lack of discovery of clues the preceding day, he realized that he was up against a difficult proposition. He proceeded to attack the problem with all the cunning at his command. Dropping back from the fire line a hundred yards or more he began to circle the burned area. Soon an exclamation burst from his lips. He had found near an old trail the plain imprint of three shod horses pointing in the direction of the fire. Following these he discovered where they had separated and tracked each one to the burned area. Searching closely McVey found a small area not over six feet wide which had apparently burned for only a short time and then died out without joining the other fire. He dropped to his hands and knees and scanned every square inch of surface. He was soon rewarded. What at first appeared to be a small twig proved to be the charred remains of a match. In a short time he picked up two more and then another. There could be no doubt, the fire was incendiary.

McVey then turned to track the horses away from the

fire. The riders had used every possible precaution to hide all traces in leaving. They had separated and taken to the rocky ground, passing through the heavy young growth. Finally the ranger trailed them out by the broken bark on the young seedlings. This was difficult work and McVey found great satisfaction in knowing that only a most skillful tracker could have followed these horses. From this point he trailed easily to Buckhorn Tank about two miles away. There the trail ended for the tracks intermingled with other tracks.

At Buckhorn Tank he met Tom Jackson, a local resident. Jackson was not friendly, chiefly because forest officers had, on several occasions, caught him with trespassing stock and had hindered other illegal operations.

"What yu lookin' fer?" Jackson's voice betrayed the enmity he felt.

"Well, if you want to know, I am looking for the men who set that fire yesterday." McVey saw no reason for concealing his purpose.

"Huh! Yu ain't got a chance," scoffed Jackson.

"Well, maybe not. But don't be too sure." The forest officer spoke slowly.

He dropped to his hands and knees. What at first appeared to be a small twig proved to be the charred remains of a match.

Jackson went on. The ranger, temporarily at a halt, rolled a brown paper cigarette and sat down. He wanted to think. Meeting Jackson gave him an idea. The man's attitude toward the Forest Service was known. He had three boys, all of whom rode the range and, furthermore, they drove their stock daily to Haught Tank for water. The horse tracks which the ranger had been following pointed to the Jackson place. More than that, Jackson's attitude and the fact that he was in this particular locality gave McVey the impression that he was out to see what was being done to determine the cause of the fire. For a few minutes he played with the idea. Then, deciding that the evidence pointed toward the Jackson boys, he proceeded to act.

Going back to Haught Tank, where he had left his car, he set out in the direction of Bear Springs lookout. The lookout's wife would probably know something about the Jackson boys as they had to pass quite near her place when driving their live stock to water. Too, they often stopped for drinking water. On the way McVey had to pass a ranch operated by McCandless, an old-time cowboy, who still did considerable riding. He had always been friendly so McVey stopped.

"Did you see that fire yesterday? McVey asked McCandless.

"Saw the smoke," replied the grizzled veteran, glancing sharply at the ranger.

"Know who was riding that way?"

McCandless shook his head.

"That fire was started on purpose." McVey spoke tersely, as he left. "I'd sure like to grab the ones that set it."

In a short time he was talking to the lookout's wife.

"Why, yes," she replied to the ranger's question, "the Jackson boys watered their horses at the tank and came through here on the way back to get drinking water."

"What time did they come here?"

"Reckon it was about eleven in the morning."

The ranger's brows contracted. Plainly he was puzzled. If the Jackson boys had left here at eleven o'clock in the morning, they could not have started a fire which the lookout sighted four hours later. It was also improbable that having watered their stock they would have returned that day. McVey disliked to drop what had seemed to be a perfectly feasible theory, but finally his reasoning forced him to do so. Baffled, he decided to drive to Bear Springs and spend the night.

When he arrived at Bear Springs he found the fire guard who had returned the previous day, and a young cowboy named Turpie. He was dressed in the customary blue jeans, wide sombrero and high-heeled boots of the cowboy, but had one distinguishing feature. One ear was slightly higher than the other.

The men were sitting on the ground outside the Forest Service cabin. McVey was thinking constantly. Who had been riding near Haught Tank? He began to question Turpie who had been born in that country and knew everyone. He would know who had been on the range.

"Where have you been riding lately, Turpie?" McVey's tone was intentionally careless.

"Been round Pine Flats and in the lower country," he replied with a trace of evasiveness.

"Know who was riding near Haught Tank yesterday?"

"No. We rode from the Porter ranch east to Pine Flats

and then north to the Mud Tanks and back," he replied.

"We? Who was with you?"

"McCandless and Slim Packard."

These men were, as McVey knew, riding for Porter. Turpie was riding for himself. "Just where did you go yesterday, Turpie." McVey leaned forward.

"Well, we rode to Pine Flat in the mornin' and up into the Slade pasture lookin' for some horses, then back through Pine Flat and down to the Mud Tanks and back to Porter's."

"Just where did you go after leaving Pine Flat?"

Turpie's reply was just indefinite enough to arouse McVey's suspicions. "I don't know that country very well."

"You ought to know it like your own back yard," snapped McVey. "With McCandless and Packard all day?"

"Yes. Except when we split up chasin' stock."

"Could you show me your tracks?"

"Don't know as I could." Turpie was becoming resentful at the continued questioning.

"Will you give me an affidavit as to where you rode yesterday, Turpie?" asked McVey.

"Yes. But you sure don't think we set that fire, do you?" He shot a keen but faintly anxious glance at McVey.

"I don't know who started the fire," McVey answered, "but if you're in the clear a written statement can't hurt you."

He wrote the affidavit and the cowboy signed it.

His suspicions pointing in a new direction, McVey went to bed. Sleepless, he pondered over the situation. He would never, he realized, have thought of these three men as being guilty of incendiarism. They had worked for him at various times. They had been trusted employees. But Turpie's inability to state clearly his route of travel after leaving Pine Flat could not be overlooked.

Only one motive seemed to fit the case. The men were all range riders. They handled considerable numbers of stock at Haught Tank, which was a roundup ground. During the past few years young pines had grown profusely over much of this area and this young growth undoubtedly interfered in the driving and roping of cattle. McVey determined to interview McCandless and Packard early the next day.

At sunup, after a hasty breakfast, he left Bear Springs and drove to Porter's line camp, but McCandless and Packard were gone. He drove to another of Porter's camps, but the men were not there. He then decided to drive to Sundown, a small supply town.

McCandless was at the general store, which, together with a pool hall, formed the loafing centers of the town.

"McCandless, I would like to see you a few minutes." The ranger spoke softly. "Will you tell me just where you, Turpie and Packard rode day before yesterday?"

"Turpie has already been here and told us about the statement he gave you." McCandless looked directly at McVey. "We rode where Turpie said we did."

"Will you give me a written statement as to that?"

"No; reckon enough's been said already."

McVey was now convinced he had found his men. Turpie must have left Bear Springs immediately after he did to find Packard and McCandless.

The ranger sought out Packard. "Will you give me a statement as to where you, McCandless and Turpie rode day before yesterday?" he asked.

Packard's voice was hard and cold. "I'm not goin' to say a damn thing. If you've got anything on me you'll have to prove it."

McVey knew him well, knew that he would admit nothing, say nothing. The men were friends. Packard's reply was final. "I'm sorry it's this way," he said finally, "but if I can get the men that set that fire, I'm going to do it."

"Go to it. You can't prove a thing."

The ranger watched the man for a moment before walking slowly to his car. Packard was right; he could not prove their guilt although to him there was no doubt. Where could evidence be secured to show conclusively that they had been at Haught Tank on the day of the fire? He drove to the ranger station, rehashing the circumstances.

The next morning he saddled his horse. A light rain had fallen and the trail would be cold, but he determined that he would ride to the Slade pasture and, if trailing was possible at all, discover whether the three men had ridden north or south from this point.

Carefully he circled the pasture. Near the fence line on the south side he found three horse tracks. So the men had, as he surmised, ridden south. He rode until he found the sheep camp, consisting of two tents. The two herders were enjoying their dinner.

"See three cowpunchers around here?" he asked.

"Si, Senor." The reply was music to the ranger's ear.

"What did they look like?"

"Weel, one she beeg, vera beeg." The herder spoke in broken English mixed with colloquial Spanish, fumbling his English pronouns in the customary and quaint way of a Mexican. "One ear, she—she" at a loss for words, he placed his hands at both sides of his head to show that one ear was higher than the other. "One, she old, *muy viejo*. One, she sleem, no talk mucha."

Turpie, McCandless and Packard. The description, though meagre, fitted them exactly.

"Which way did they ride when they left?"

The Mexican pointed west toward Haught Tank.

"Seen any of them since?"

"*Si,* beeg hombre come back. She say geeve me feeftv dollar, say she no been here. I no take eet."

The chase had ended. The evidence was sufficient.

The next day he swore to a complaint before the nearest United States Commissioner and again rounded up his men. When he had them all together, he looked them over.

"Too bad you boys ate dinner with those Mexicans. You ought to get out of this for about two hundred apiece."

"Well, you are a tracker, McVey." Turpie's voice showed his respect for the other's prowess.

"You shore are," McCandless followed suit.

Packard shifted his weight to the other foot but remained silent. McVey had called his hand.

The Making of a Town Forest

By G. H. Collingwood

HISTORY is constantly repeating itself but always with new and unexpected variations. Centuries ago the people of central and northern Europe became exercised over the shortage of timber. Lack of adequate transportation forced them to consider possibilities of growing timber and wood products close at home. So the king's hunting ground became a public forest and cities looked for nearby places to grow their wood supplies.

Town forests were established over all the land, many of which have continued to exist through hundreds of years. At least two-thirds of all the forests in Switzerland are owned by the communities, and other European countries have more forest land in town or community ownership than in state or federally owned forests.

"The Making of a Town Forest" is a subject in which The American Forestry Association has long been interested. If every town could have its municipal forest, it would no longer be a question of how to make the American people forest-minded.

"Memorial Trees and Groves" will appear in an early issue, and will complete the series on tree planting and tree care.—Editor.

None are so well known as Zurich's city forest, the Sihlwald, whose 2,840 acres yielded more than $20,000 a year before the war. The forest has been under management and protection since the year 853, and has been known as the city forest of Zurich since 1524. Many foresters who were in Europe before 1915 will remember stimulating conversations with Forstmeister Meister who administered this forest for more than forty years. Few foresters have seen the fruition of their vision to the extent made possible by the long service of this forest administrator.

Germany is reported to have 1,500 town-owned forests, of which 500 pay a surplus to the town citizens after paying all local expenses. In France a total of five million acres of woodland are owned by towns or communities. The average area of these forests is about four hundred and fifty acres.

The principal purpose of the Cook County Forest Preserve, which nearly surrounds Chicago, is to provide wholesome outdoor recreation for the people.

The extent to which forest land is owned by towns and communities in Europe is seldom appreciated, but the growing popularity of this form of ownership in America suggests an important means of solving our own land and forest problem. In no other way does local pride and local initiative combine so satisfactorily to achieve the protection of forest areas. The reasons for establishing town forests in this country are not unlike those which prompted similar efforts on the part of Europeans of earlier centuries, but the emphasis has changed with new conditions. The need for an assured source of wood products prompted the establishment of many European town forests, but the discovery of new lands and the development of means of transportation has placed wood second in many places to the need for continuous volumes of pure water. With cities realizing that their ultimate limit of population is fixed by the amount of available water, it is no wonder that modern America is turning to town forests to protect the municipal water supply. Statistical records of the accomplishments of the forest in arresting the flow of water are not many, but there is no disputing the function of the trees. Drops of rainfall caught by leaves and branches are guided down the tree trunk or splashed in a fine spray on the ground. They do not beat upon the soil or wash away the surface, for the carpet of leaves and litter soaks up the water like a sponge. Later the accumulated water seeps into the soil and becomes a part of the vital undersurface flow that makes itself evident in springs and a reasonably high water table. Almost three inches of steady rainfall may occur in a forest before the surface flow is affected.

The Pennsylvania Department of Forests and Waters reports that twenty years ago there were seventeen springs on the timbered area of the Oliver Estate near Wilkes-Barre, one of which flowed 250,000 gallons daily. Since then the timber has been removed and only seven springs remain. All of the springs have a greatly diminished flow, and the one which furnished 250,000 gallons of water a day, now yields scarcely 50,000 gallons.

More hopeful examples can be found where the flow of springs was reestablished after the watershed had been again clothed with trees. Such a case may be found among the plantations of pine and spruce on the Nolde Estate near Reading, Pennsylvania.

Extreme examples of the value of forest and brush cover are in the vicinity of Los Angeles, California, where engineers furnish evidence that the expenditure of $700 for masonry and concrete structures would scarcely equal the water-holding capacity of an acre of land well covered with forest and brush. Is it any wonder that Los Angeles County has a more complete forest fire organization than most states?

Some areas held as town forests have been taken over to protect local property rights in tax-delinquent lands, while others have been gifts from public-spirited citizens. Occasionally one hears of a "Poor Farm" that has been turned into a town forest because there were no occupants. In Europe the town forests were sometimes built out of the remnants of ancient forest commons that dated back to feudal times. Others were created after some of the old "free-use" privileges were adjusted about a century ago.

A stand of European beech in the city forest of Zurich, Switzerland. Some of this area has been under forest management for a thousand years.

Regardless of whether a town forest is established to protect a municipal water supply, or to maintain and care for land that has been abandoned by its original owners, it offers splendid recreational possibilities. In fact, municipal forests whose acknowledged purpose is for public recreation are increasing in number. Outstanding among these is Chicago's Cook County Forest Preserve. Here more than 30,500 acres furnish places where people of the city may rest and recreate. It may never contribute heavily to the needs of wood-using industries, but this forest furnishes a haven for those city families who make a large part of what Calvin Coolidge described as the greatest of all the natural resources possessed by the country. The forester in charge has discovered that the Cook County Preserve is a means of education for better citizenship. Realizing that public property needs protective care, vandalism even within the Chicago Preserve grows less each year. It might follow that vandalism in other communities would grow less under such influences.

More town and community forests have been established in New England than in any other comparable area. No doubt this is because it is an old settled region where population is fairly dense and where wood-using industries have developed to an extent comparable with many regions in Europe. As in the older continent, one may expect the town forests to supply material for local wood-using industries, and maintain a permanent population of responsible citizens whose livelihood is in the forest.

At least eighty-six town forests have been created in Massachusetts, where the Massachusetts Forestry Association has vigorously supported the idea. The association was largely responsible for the passage of a Town Forest Law in 1913, which amended an earlier law passed in 1882. Since the passage of the new law, the Massachusetts Forestry Association has offered to plant 5,000 trees free of charge for any town that would establish a forest of 100 acres or more. Recent reports indicate that town forests aggregate about 20,000 acres, which represents an area one-sixth as large as all the state forests in Massachusetts. More than two and a half million trees have been planted on these town lands to supplement the existing forest growth.

First of all these Massachusetts town forests to be created is one at Fitchburg, established in 1914. The forest contains 109 acres in four tracts, all of which are well stocked with valuable commercial trees. In addition the town owns forests and parks covering nearly 1,500 acres. This property, together with civic responsibility for the trees on the city streets, warrants them in employing a city forester.

The largest Massachusetts town forest belongs to the little

town of Russell in Hampden County. With scarcely 1,300 people the town has acquired more than 2,500 acres. This includes the watershed which furnishes the town with water. Here the town has planted over 200,000 trees, and is now engaged in a ten-year program calling for the planting of 30,000 trees a year for ten years. The area is administered by a town forest committee which is carefully following a ten-year program of work prepared by the State Forester.

Many town forests are close to settlements and the areas have been long associated with community growth. Their records are filled with human interest. Professor R. T. Fisher, Director of the Harvard Forest, describes how the town of Petersham turned its "Poor Farm" into a town forest.

"A few years ago the town of Petersham received an offer of $10,000 for the timber on its 'Poor Farm.' On recommendation of the Harvard Forest the offer was declined and the town farm, no longer used for a 'Poor Farm,' was created a town forest. Mature timber on approximately twenty acres was sold for more than $5,000. The remaining area of approximately 125 acres is well stocked with growing timber so distributed as to area and age that at least three substantial cuttings can be made in the next twenty years. The forest is under the supervision of a Town Forest Committee, of which the Director and Assistant Director of the Harvard Forest are members. The land cut over for the first sale has restocked by natural reproduction which has been brought into satisfactory condition by weeding. The Petersham Town Forest is a small but well-constituted piece of forest capital. If its growth and composition are controlled by timely improvement cuttings and weedings, it should yield substantial periodic incomes forever."

Second growth hemlock and hardwood in the tract which forms the nucleus of a town forest for the village of Ladysmith, Wisconsin.

No less romantic are the beginnings of town forests in New Hampshire where sixty-one towns have 12,000 acres. This surely is a record of which the state may be proud.

Hanover has cooperated with Dartmouth College in the purchase of 1,325 acres surrounding the reservoir from which comes the local water supply. About 60,000 trees have been planted along the shores of the reservoir and much of the other land is well stocked with second growth. Eventually the town should be able to supplement the income it receives from water with an income from forest products.

Evidences that a town may have its own forest and not realize it, is found in Grantham, New Hampshire. Back in 1800 when this town was laid out a 100-acre lot was customarily assigned for the support of the minister and another similar area to the schools. Grantham met the occasion by laying out two lots on the mountain back from the little town. For years timber was cut and the tracts were used for the purpose for which they were intended. Later with increased facilities for transportation the townspeople lost interest in such inaccessible lands. The minister got his wood nearer home and town meetings made appropriations for the schools. Meanwhile the trees grew. Years later lumbering operations were started on Grantham Mountain close to the town's lands. Fortunately a few citizens remembered about these lands, and suspected that some of the town's timber was being removed. With the aid of a surveyor who had been born and raised in Grantham they found the original corners and proved that some of the best timber on the town lots had been cut. The operators settled with the town for $1,100, leaving timber on the tract valued at $3,000, and the incident established interest in the town forest.

Nearly thirty years ago the village of Carthage in northern New York began to purchase land surrounding and protecting the springs from which they secured their water supply. To this end they acquired about 2,000 acres. Part of this is in good second growth, but nearly 500 acres of open fields have been planted to pine. The light sandy soil is unsuited for agriculture, but the trees have grown splendidly.

Probably New York City holds more forest land to protect its water supply than any other municipality, but some of the other New York State cities like Rochester, Syracuse, Elmira, Ithaca, Glens Falls, and Little Falls have fully as much in comparison with their population.

The opportunity for town forests is not confined to older settlements of the East. They are only more awake to the

possibilities which this class of ownership holds for municipalities. The Lake States are filled with similar opportunities. Not long ago the village of Ladysmith, Wisconsin, took over some of the land which had reverted to the county for failure to pay taxes. The area is not large but furnishes a splendid place for local agricultural high school students to receive forestry instruction. Eventually the little timber lot may be the nucleus of a larger town forest to support at least one permanent sawmill and remind the people of Ladysmith of the lumber industry that gave birth to the town.

Town forests promise to grow in favor. They combine utilitarian interests with those that are esthetic and recreational, for they are located near centers of population where large numbers of people may enjoy them. More than that, they may be a real source of income for special civic purposes. Professor Ralph S. Hosmer of Cornell University has called attention to Zurich's Sihlwald and other Swiss communal forests, where the net revenues support certain quasipublic institutions, like hospitals, libraries, and museums, and are not placed in the general treasury of the town. In an article in *American Forestry* for March, 1923, he suggests this policy for American town forests. "The city forest of Zurich, Switzerland," declared Professor Hosmer, "is one of the most interesting in all Europe. It has been used continuously for forest production since the year 853. Since 1524 it has been the city forest of Zurich, supplying in large part the needs of that city for timber and for wood.

Above: **Plantations of pine and fir cover the watershed around the municipal reservoir of York, Pennsylvania.** ***Right:*** **Planted pine mingles with second growth pine and hardwood to protect the water supply of Glens Falls, New York.**

"We in America have no such background for our town forests. Our problem is to utilize waste or otherwise unproductive land belonging to or acquired by the town in such a way that it shall yield a revenue, assist in some cases in the protection of the local water supply, and also contribute to recreation. But in practice this is just what the European town and communal forests also are doing. We can thus study them with profit.

"A point to stress about the Sihlwald Forest at Zurich and many other Swiss town and city forests is that the net revenues go, not into the general treasury of the town, but to the support of certain specified quasipublic institutions, like hospitals, libraries and museums. This reduces the amount that has to be raised through taxation and helps to give an assured income to these institutions." If it were provided that the net income from the town forest would be used to help support the local hospital or the town library, the project would appeal to many who might fail to become enthusiastic over a more general proposition. One has only to remember the various community chest drives to realize the advantages of some such permanent endowments.

In such a program the town forest would have a unique part. It would contribute to the timber supply and to the prosperity of the community. It would furnish a much needed place of recreation. Portions of it might protect the municipal water supply, while the net proceeds would be used to support local charitable or educational institutions.

It is an open question as to whether municipal ownership of forest land needs the recognition of state legislation. Certainly it should not be difficult to secure. Such laws now exist in nearly all of the New England states. New York State passed such a law in 1912, while New Jersey, Maryland, Wisconsin and California have similar laws.

The United States Forest Service has prepared a long bibliography on town forests, which refers almost entirely to articles in magazines and pamphlets. Europe has contributed more than America, and to a considerable extent the American articles are descriptions of European practice. No single individual has written more on town forests than Harris A. Reynolds, Secretary of the Massachusetts Forestry Association. In January, and again in November, 1929, that association held conferences of the Massachusetts town forest committees. The reports of these two conferences present a picture of town forest progress in this country. The biennial reports of the New Hampshire Forestry Commission are filled with description of town forests in that state. In 1913 the New York State College of Agriculture at Cornell University published a bulletin on country, town and village forests. This includes a copy of the state law authorizing the governing board of a county, town or village to acquire and manage forest land. The files of *American Forests and Forest Life* include descriptions of progress in this country, together with reports of some of the more important European forests.

An Oklahoma Oasis

Proving that the Desert Can Be Made to Blossom Like the Rose

By George R. Phillips

BLOWING SAND—shifting acres of it! Red arroyos splotched white with alkali; prairie sage—token of worthless pasture—a typical movie wild-west landscape. Not a tree in sight save a lone, scraggly cottonwood on the crest of the highest knoll. People said crops and fruit trees would never grow there, that the land was too poor, in fact no one had ventured to file a claim on this particular tract, despite the fact that it adjoined a prosperous and growing trade center. Too much good land lay within easy reach.

That was fifteen years ago. Then the Bureau of Plant Industry of the United States Department of Agriculture let it be known a site was desired upon which to establish a dry land field experiment station. Land in the vicinity of Woodward, in the twenty-four-inch rainfall belt of northwestern Oklahoma, was desirable. The foresighted county fathers generously acquired the once unattractive, sandy knoll bordering its southwest corner and made it available to the department under long-time lease. The city of Woodward provided an adjoining quarter-section and the "Woodward Dry Land Field Station," as it is now widely known, started its career of service with a half-section of rolling sand hills and gashed red land as its laboratory.

Crops suitable for the fertile prairie lands of western Oklahoma and adjoining sections of other states, to supplant the fast-diminishing cattle industry, were paramount in the Station's initial efforts; but the officials in charge also had visions of the part trees could play in making the plains homes more attractive and comfortable. Above all they had faith in the ability of the region to produce trees, despite the oft-sounded warning that Nature never meant trees to grow there, else she would have provided them. They planted trees and shrubs and flowers, of many species and from many lands. Failures—and there were many—but served to spur them on. Today there stands, actually growing, waving in the wind, a monument to their foresight and perseverance, a veritable Oklahoma oasis.

Rows of trees line the entrance to the Station; windbreaks

The shifting acres of sand have been anchored and vineyards, groves and windbreaks now replace the prairie sage. Above is shown the Woodward Dry Land Field Station as it looked in 1910, with a single cottonwood tree breaking the rolling expanse of prairie.

of trees, both evergreen and deciduous, protect the buildings, the orchards, the vineyards and the experimental plats from the cold, biting winds of winter and from the hot, dry winds of summer as well. Carefully arranged and pruned ornamentals surround the house and the office. Beds of shrubs and flowers frame the campus, many inspired by the ladies of the Station who keep the men at work after hours. The effect is homelike, inviting. It fairly calls one to stop, linger and see—and learn. For there is much to learn from the Woodward plantings—not only which species grow the best and how fast different trees grow, but of the homely, practical methods followed to make it possible for trees to survive there the early years of hardship so as to arrive at the time of real beauty and service.

Prominent among the trees growing so luxuriantly at the station is the Chinese elm (*Ulmus pumila*), introduced into this country in 1908 from Manchuria, a province in northern China. It seems perfectly at home at Woodward. Some of the larger trees on the campus, although now only twelve years old, measure fourteen inches in diameter, breast high, and are forty feet tall. Seeds from these trees were distributed to commercial nurserymen who have promoted the use of the Chinese elm as a shade tree throughout the Southwest. In addition to *Ulmus pumila* are two of its close relatives, *Ulmus parvifolia,* with smaller, glossy leaves and a slower habit of growth, and a yet unnamed species with larger leaves and a tendency to grow rapidly into a tree with a strongly knit rounded top, an excellent tree.

Twenty-one feet tall in fourteen years is a pretty good record for Scotch pines in the semi-arid desert of the Southwest.

The native American or white elm, sycamore, honey locust, and silver maple rival the Chinese elm in size and the cottonwoods rear their heads above all. Even black walnut, hackberry, green ash, Russian olive, Russian mulberry, and *Bois d'Arc* make splendid growth. Among the evergreens the Scotch pine seems most adaptable. A height of twenty-one feet in fourteen years is a good inducement to hold before any farmer who is hesitating to plant a windbreak. Chinese arbor vitae and western yellow pine, native in the extreme western end of Oklahoma's panhandle, come in for their share of recognition; and for a fast grower, adaptable both as an ornamental and as a windbreak tree, the Arizona cypress must have a prominent place in the picture.

It has taken no fairy magic to start and grow these trees on Woodward County's shifting hills; neither has it required unmeasured quantities of water. Only plain, common-sense practice was necessary to make the desert blossom—a well-prepared planting bed to start with; periodical cultivation with a spring-tooth harrow to keep down competing weed and grass growth, and sometimes boards or shingles stood upright in the sand on the south side of the baby trees to protect them from the hot summer sun, the dry winds and cutting sand during their first year of growth.

And now Oklahoma is taking her place as a tree-planting state. Her State Forest Commission is making available, at nominal prices, thousands of little trees for woodlot and windbreak planting on prairie farms—trees of the same species found so adaptable at Woodward.

And these are Chinese elms, fourteen inches in diameter and forty feet tall, planted at the Station in 1916.

As a tree-planter's guide, the field station has already served a great purpose, but to those who have watched it grow and who visit it now it is coming to be valued and loved as an Oklahoma oasis to which golden California, historical old Virginia, sleepy Alabama on the Gulf and many other distant states have contributed. Adding to its desert glory, too, are Alaska in the great Arctic Circle, beautiful Japan, where cherry blossoms grow, and even merry old England. In fact the world is contributing to a festival of flowers and trees.

Fort Frederick Memorial Forest

The First D. A. R. Forest

By Thomas H. Bartilson

RICH in the lore of by-gone days, old Fort Frederick in western Maryland is one of the most interesting landmarks in the entire state. What more fitting than that the traditions of this historic place should be preserved as the nucleus for a fine demonstration forest and living memorial not only to the old fort and those who defended it, but also to the vision and enthusiasm of a group of nature loving, public spirited citizens of the state?

Fashioned of native stone and cement, and today probably the best-preserved pre-Revolutionary fort in the country, Fort Frederick was built by the Colony of Maryland in 1756. It functioned continuously as an outpost during its early history and saw its first real service in the French and Indian War when Maryland militia was garrisoned there.

During the Revolutionary War the fort went into action again. Part of the time it served as a prison camp for captured Hessian soldiers. Probably feeling that all of the wars had been fought and feeling an additional security in the peace that followed the cessation of hostilities, Fort Frederick was sold to a private individual shortly after the war and for many years was used for farming purposes.

It was not until the strenuous times of the Civil War that the fort was again called upon to resume its military career. Recommissioned to garrison a battery of Union artillery, it was used throughout the war as a defense for the Baltimore & Ohio Railroad, the Chesapeake and Potomac Canal, and for an important ford across the Potomac at that point. Thus the old fort has had a varied and important military history.

In 1922 the Department of Forestry of Maryland acquired the property for a large-scale demonstration forest. Intrigued by the outstanding history of the spot and convinced that a living forest is one of the finest memorials any group of people can erect for posterity, the Maryland Chapters of the Daughters of the American Revolution volunteered to sponsor the planting of the trees.

Since the plantings were begun at the northern end of the property, each year has witnessed substantial progress toward the goal of reforestation. New blocks of trees have

—Photograph by Maryland State Department of Forestry

Old Fort Frederick, one of the most interesting landmarks in Maryland, is to be preserved forever as the nucleus of a fine demonstration forest and living memorial. Maryland Chapters of the D. A. R. have sponsored the planting there.

been added periodically as conditions permitted. In 1924 a memorial planting of 1,149 white pines was made, one for each member of the Maryland D. A. R., and during this same year the Children of the American Revolution of the state made a planting of white pines, designed to form an eight-acre grove.

In the spring of the following year tree planting was continued, the Colonel Nicholas Ruxton Moore Chapter of the Children of the American Revolution setting out one and one-half acres of Scotch pine and three and one-half acres of a mixture of Scotch pine and locust. In addition, one acre was planted to European larch and one acre to locust, the care of the latter being taken over the following year by the three state societies of the Children of the American Revolution.

One and one-half acres of tulip poplar, one acre of red pine and one acre of white ash were added to the forest during 1926, the poplar being presented by the Maryland State Society of the Daughters of the American Revolution. Last year saw an acre of sugar maple and an acre of red oak added to the rapidly growing demonstration forest. In the fall another acre was planted to walnut.

It is more than encouraging to note that, with the exception of the larch, which was severely hit with freezing weather shortly after it was planted, all of the plantings have fared very well. The white pines have suffered an attack of white pine weevil, but proper care and hard work has held this pest in check without serious damage to the trees.

This use of a forestry planting on such a large scale by such an organization as the Daughters of the American Revolution is most commendable and suggests similar opportunities to other organizations. What more fitting as a memorial than one of God's own beautiful forests? The Maryland project, started in 1924 as a contribution to conservation and the natural resources of the State of Maryland, is said to be the first D. A. R. project of its kind in the United States. Since that time, however, the idea has met with the approval of and been put into operation by the D. A. R. Societies of Texas, Massachusetts and Iowa.

Grazing Out the Birds

(*Continued from page* 557)

in a few years insects will have multiplied to such an extent that trees will de denuded of their foliage, plants will cease to live and crops cannot be raised." He estimates that 150,000 bushels of insects are consumed by all the birds in Illinois for each day's fare. This amount of insects will fill up three average-size grain elevators each day, having a capacity of 50,000 bushels each.

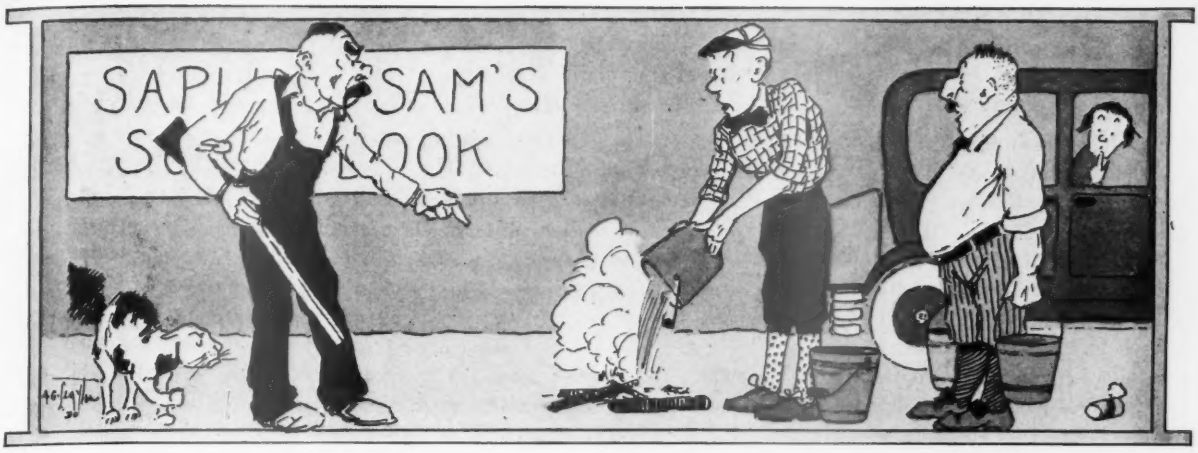
Gilbert H. Trafton in *Bird Friends* has tabulated the percentage of food of a number of birds based upon reports of the United States Biological Survey. His figures, for a few of the birds of value to the farmer which are driven out of the woods by grazing, are given here:

	Credit			*Debit*			
	Insect pests	*Weed seeds*	*Total credit*	*Fruit*	*Grain*	*Benef. insects*	*Total debit*
Bob-white	10	50	77	..	5	..	5
Cardinal	24	36	60	..	4	2	6
Catbird	12	..	12	19	..	3	22
Cuckoo	88	..	88	..	..	..	..
Mourning dove	..	64	64	..	8	..	8
Brown thrasher	33	..	33	8	3	8	19

The instances where birds have directly controlled serious insect epidemics are legion. Junius Henderson in *Practical Value of Birds* devotes an entire chapter to authentic cases. Perhaps the best-known incident of the sort is that of the gulls and crickets in the early history of Utah. While not illustrating the value of woodland birds, it is of sufficient interest to bear repeating. "Myriads of crickets, having destroyed one crop in the Salt Lake Valley, were fast ruining the second, which would have left the people, in the absence of transportation facilities or ready communication with the outside world, in dire distress. Before it was too late gulls arrived by hundreds and thousands and saved the crops from destruction and the people from starvation. In commemoration of this event, which was considered by the Mormons a miraculous intervention of Providence, the people have erected a beautiful and expensive monument to the gulls."

Henderson also cites the Rocky Mountain locust plague of 1873 to 1876 which was thoroughly investigated by government agents who collected a large amount of definite data as to the important part birds played in the control of the insects.

The average pastured woodlot of the Corn Belt or other rich agricultural sections has long ceased to yield a profit to the farmer either in products for his own use or for sale. If they are to be saved from total extinction and brought back to a productive condition they must be handled with the same care as any other portion of the well managed farm. The first step the intelligent farmer will take in rehabilitating his woodlot will be the removal of the grazing stock to give reproduction a chance to establish itself. The underbrush and other cover necessary for the protection of birds will also become established and the woodlot will soon become repopulated with the feathery tribes so valuable in destroying the hordes of insect pests that infest growing crops.



A Warning to Fishermen

A Florida fisherman had to be taken to the hospital after a three hour struggle with a six-foot tarpon. It is believed that he severely strained himself in his efforts to illustrate the size of his catch.—*Judge.*

Bunyan's Babyhood

More light on the early life of Paul Bunyan keeps coming to the surface. One "Pro Bono Publico," writing to the *Upper Peninsula Development News,* asks:

"Did you know that when Paul was three weeks old he was weaned on Three Star Hennessy? It's a fact, I've seen the pile of empties down the Tahquamenon River. One day about that time Paul was out in the back yard. His mother heard a commotion and when she got to Paul he was calmly chewing a nice raw ham from a bobcat. The animal had crept upon the baby, but Paul saw it coming and choked it to death."

No Smoking!

Seen on a sawmill wall at Newberry, Michigan:

"The men who chew
Are the men who do."

'Tis Amusing

"Really, Bill, your argument with your wife last night was most amusing."

"Wasn't it, though? And when she threw the ax at me I thought I'd split."—*Annapolis Log.*

Kitten Inside, We Suppose

A Eugene, Oregon, paper offers this in its classified advertisements: "STRAYED—December 29, half-grown tiger and white pet kitten."

Early Days on the Santa Barbara

Mr. Van Winkle, early day ranger and now a prominent business man of Santa Barbara, gives the following among other interesting anecdotes:

While working as a guard on improvement work with John Libeu, they became storm bound in Indian Canyon. On one day it was absolutely impossible to work, and as they lay in their tent Libeu remarked that there was one consolation—their pay went on just the same.

On returning to headquarters some time later Libeu found an order from the Secretary of the Interior stating that rangers would not be paid on rainy days when no work was performed. Libeu then remarked to Van Winkle:

"Ze pen is mightier zan ze brush hook. From now on zare will be no rainy days on my deestrict."—*News Letter.*

How About a Tiger Lily?

A piece in the paper tells of a man-eating tiger killed in India that was found to be wearing a collar. Our credulity will carry thus far, but if we ever read of one wearing spats and a gardenia we shall be tempted not to believe it.—*Arkansas Gazette.*

Oh, to be a Forest Primeval!

In this day of drought, heat and humidity, another fire hazard arises to worry the foresters. Eddie Cantor, just back from Hollywood, tells this one.

During the filming of a scene near a sugar pine forest, Eddie relates, a property man came dashing out of the woods, waving his arms wildly.

"Run for your lives!" he shrieked. "The forest's on fire!"

"Fire!" bellowed the director. "Who the Sam Hill started a fire?"

"Clara Bow just kissed a tree," the man replied.

"O Wad Some Power—"

Manuel, a negro with a record hitherto clean, was arraigned before a country justice of the peace for assault and battery.

"Why did you beat this man up, Manuel?"

"He called me a rhinoceros, sah!"

"A rhinoceros! When did this occur?"

"'Bout three years ago, Jedge."

"Three years ago! Then how did it happen that you waited so long to resent it?"

"Lawd, Jedge, I ain't never seen no rhinoceros till dis mawnin'!"

He Wood!

There was a youth so *spruce* and neat,
Who loved a maiden wondrous sweet,
A *poplar* girl, with her he'd stray
Along the *beech* beside the *bay.*
When breezes fraught with ocean air
Would softly touch her *chestnut* hair,
Her rosy *palm* in his was pressed,
To ask *pawpaw* was her request.
Should he succeed, with hope elate
She promised him, she'd fix the *date.*
He sought her home that very night
Altho he feared the *dogwood* bite;
But for her sake he could dare
So not a *fig* then did he care.
Then spoke he to the *elder* man,
"To win your daughter's hand, I plan
And for her constantly I *pine*
So, Honored Sir, may she be mine?"
The father said, "For one so kind
O-range the world, and none you'll find.
Then should she leave me, I must sigh
For she's the *apple* of my eye.
And from my side should she be torn
'Twould pierce my heart like a *thorn.*"
Then spoke the youth, "And yet I dare
To ask you for your daughter fair,
And truthful must I surely be
Like him who chopped the *cherry* tree,
I love the maid, in truth I do,
Her cheeks have caught the *peaches* hue.
I long to press her *tulips* fair."
Replied the sire, "I'll bless the *pear.*"

—*Selected*

Wild Indian

(*Continued from page* 574)

one of John Jacob Astor's fur posts. Lolo became hysterical and ran off around the island, and found a birch-bark sign, framed in spruce, nailed to a tree. Its cutout letters spelled "Eagle Rock."

We got out all the maps. Billy said that Outakamamoan was the second lake down and perhaps those traps belonged to Squirrel, the wild Indian. I saved the card of matches to hand back to Squirrel when I met him. Lolo said she'd give him her camera as ransom. And anyway, we no longer looked like tourists. We looked like something the cat had dragged in. And Lolo would have given her new husband for a shampoo and a bath in warm water. She didn't actually hate him—very much. I did. These were his maps, this was his route, it was his choice of canoes and guide—and it was his honeymoon.

Our route was chosen for us, now, by the run of this deepcut street of the Red Gods—and it led straight down the river toward Trout Lake. It rained. Then it sleeted. Monty's map sense led us into a long, blind bay—three miles in and three back. We came to a forest ranger's sign warning against fire. We couldn't have built a fire. Every mile or so was a rapids. We ran some, we waded others. With canoes awash with rain we rambled down Bug River.

We rammed into a slippery, greasy bank over which snapped and snarled seven mangy dogs. Mr. Joseph Musgrave, native of Chester, England, camp clerk, camp watcher and government scaler, welcomed us to Camp No. 5, Border Lumber Company. That is, he came down the path from the office and called off the dogs.

During supper Mr. Musgrave unglued his tongue. He had seen no white persons in three months, no white woman in more than a year. No tourists had come through this way this year. Ah! And why?

He didn't answer. He told us many things. Later, he confirmed some of them with newspaper clippings yellow with age, from London and Glasgow papers. He had been in the Canadian bush for twenty-five years, ten years straight without coming out once. His last mail had come in May. His next might arrive in October.

It kept on raining. Mr. Musgrave piled clean blankets on the top bunk to shelter Bill and me in the office. Monty and Lolo slept in the one dry corner of the huge cook shack, on springs laid upon boxes of tinned Ontario apples. Rats and mice played keeping house amid tons of provisions left over from last season. But we all slept.

We had golden pickerel for breakfast. Mr. Musgrave was a cook. He made bread as light and large as feather pillows. It was almost as good as Billy's bannock.

"Squirrel? Why, I believe old Squirrel is dead."

Thus spoke Joseph Musgrave, asked a point-blank question.

"Two Indians came up in April looking for him and could not find him. He must have gone out or gone West. They wanted to tell Squirrel the Chief said it would be all right for him to come out. He used to come to camp every fortnight, begging cast-off clothes and trading furs to the cook for food. He never had a gun."

All aboard for Trout Lake! Loaded down with more tins of things—with sharp edges—from the cook shanty. Mr. Musgrave stood on shore and snapped pictures of us with shaking hands. Late that day we searched for a camp site along the wooded shores of that great body of water known as Outakamamoan, or Biting Lake, or Trout Lake. Rocks with moss over them held no more attractions since our spring-cot luxury at Camp No. 5. At last we caught the white gleam of birch tepee poles on a low-lying island, and made for them.

Lolo leaped ashore and ran right up the rocky center of the island seeking berries, blue or red. The skeleton of a tepee gave me a fine frame on which to fling my canvas. Monty scorned aid in erecting his nuptial shelter, so I climbed the rocky center seeking Lolo—and berries.

From the top of the island I could see water in every direction. But I could not see Lolo. I whistled and called to her. There was no response. I returned to camp and found Monty stretching the canvas of the honeymoon home tight and making my tepee look like a frump.

"Where is Lolo?" I inquired casually. "I didn't see her up there."

Monty's eyes bulged and terror froze his face. "Squirrel might have been camping here and—!"

"Well, he might have!" Monty had a piercing tenor voice. He used it. Reckless of his own safety—and mine—reckless of whether he called Squirrel from some far fastness or from the grave, he circled the island, baying like a hound. I circled, too, in the other direction. We met. Nothing doing. No Lolo. No track. We rushed back to camp and tore Billy away from the broiling bacon.

Billy found her trail. It led up the ledge, along the top, over another brink at the foot of which was water, deep water, and where the sun streamed down upon the bare rocks. No tracks to be found on those rocks.

"Yahoo! Lolo! Yahoo!"

This was not an Indian war-cry. It was a white man's love-call—a very white man's. Monty's. White as milk. Lolo came staggering up the ragged cliff, rubbing sleep from her eyes. It had been warm and comfortable in the sun after paddling in the rain. The honeymoon began again.

Billy and I decided we had better go out and troll for lakers. They didn't hit. Billy said it was on account of the moon. Honeymoon, probably.

The rest of the trip was just paddling and portaging through tough country where careless lumbermen have left their trail of slash and burn. Headwinds met us every morning. Rain wet us every day. Big waters and big waves welcomed us to Redgut Bay. Lolo slept under blankets in Billy's canoe. The adventure was over.

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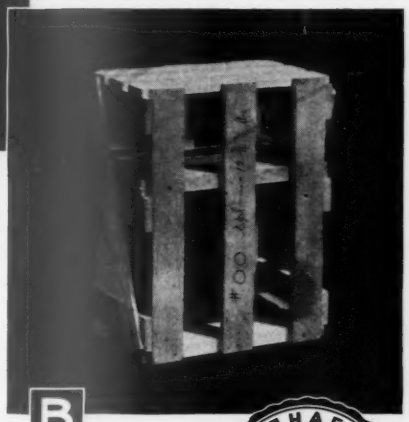

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Baker Elected Dean of New York State College of Forestry

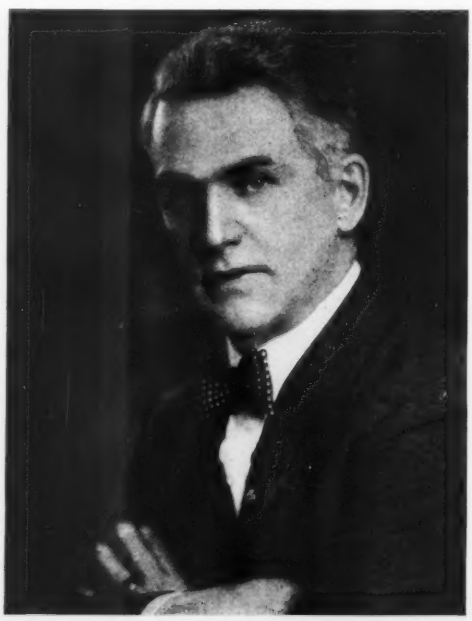
After ten years of organization work with industries, Dr. Hugh Potter Baker has again accepted the Deanship of the New York State College of Forestry at Syracuse University, Syracuse, New York. Following action by the Board of Trustees on July 18, Dr. Baker decided to give up his position as manager of the trade association department of the United States Chamber of Commerce, at Washington, D. C., to enter upon his new duties on September 1.

As the first Dean of the New York State College of Forestry, Dr. Baker laid its foundations. Many of his policies were continued by Dean Franklin F. Moon after Dr. Baker's resignation in 1920, and more recently by Acting Dean Nelson C. Brown.

In 1920 Dr. Baker accepted the position of executive secretary of the American Paper and Pulp Association with headquarters in New York. While with the paper and pulp association he was instrumental in forming the Woodlands Section. He organized pulpwood studies in the Lake States and in the South Atlanta States, and arranged a special investigation of stream pollution by the paper and pulp industry. In every way possible he has maintained a close association with forestry activities. He resigned in 1928 from the American Paper and Pulp Association to become manager of the trade association department of the United States Chamber of Commerce, where again he has been able to keep in touch with the forest activities.

Dr. Baker returns to Syracuse with a long and varied experience in forestry, industry and academic administration. After graduating from the Michigan States College in 1901, he studied at the Yale Forest School where he received a master's degree in forestry in 1904. From 1904 to 1907 he was professor of forestry at Ames, Iowa, and during this time gave the first forestry short course for rangers at Fort Collins, Colorado. This was to a certain extent a forerunner of the Ranger School at Wanakena, New York, which is under the jurisdiction of the New York State College of Forestry. From Iowa he went to Pennsylvania State College, where he interrupted his forestry teaching to study forestry at the University of Munich in Germany. There, in 1910, he was given the degree of Doctor of Economics.

In addition to his official responsibilities since leaving Syracuse University in 1920, he has served as chairman of the Conservation Council of the Westchester Park Commission. He has been a member of the executive committee of the National Wood Utilization Committee since its inception, and is one of the Board of Managers of the National Institute for Commercial and Trade Organization Secretaries at Northwestern University.



Hugh Potter Baker

Would Amend Federal Power Act

Asserting that the Federal Power Commission should have authority to consider esthetic, scenic, recreational, and other like public values in passing upon applications for power development, the National Executive Board of the Izaak Walton League of America, on July 23, voted to sponsor legislation in Congress providing this authority. The legislation proposed would also make it incumbent upon the Federal Power Commission in passing upon applications for power permits to secure from government scientific bureaus expert opinion as to the effect of each project on wild life and migratory fishes. It would also require all licensees to cut clean and remove all timber and tree growth from the entire flowage area in order to prevent unsightly conditions; to remove hazards to users of such impounded waters for recreational purposes; to allow a sufficient flow of water in the natural stream bed below all dams to maintain not less than the normal ten year low water flow, and to open impounded water to public fishing, boat-

ing, bathing, and other recreational uses.

The action of the League in sponsoring this amendment of the Federal Power Act followed the opinion rendered last month by the Attorney General Mitchell in the case of Cumberland Falls, Kentucky. In this opinion Attorney General held that while the Federal Power Commission has jurisdiction to entertain the application of the Cumberland Hydro-Electric Power Company for a license to carry out its project on the Cumberland River, the United States under the Federal Power Act has no power to prevent the erection of a dam at Cumberland Falls, unless the effect of the dam would be to impair substantially the navigable capacity of the lower branches of the river. "It could not prevent," the Attorney General held, "the erection of the dam because it would interfere with the scenic or recreational facilities at that point and Congress has not by the terms of this Act attempted to confer upon the Commission the power to refuse a license because of such considerations. * * * The Commission must look only to the effect of construction upon inter-state and foreign commerce."

The opinion, it is pointed out, applies to private land and to non-navigable streams whose waters flow into navigable streams. The Attorney General did not undertake to define the jurisdiction of the Power Commission with reference to publicly-owned lands and to navigable streams. In commenting upon the ruling Mr. F. E. Bonner, Executive Secretary of the Federal Power Commission, explained that the Attorney General's opinion applied to a special form of the Commission's jurisdiction and has no general application. "The project is situated entirely on private land and upon a non-navigable stream. Ordinarily such a development would be constructed under the state laws and the federal government would have no jurisdiction whatever, but on account of the possible effect of the impounding capacity of the project works upon the operation of the navigation improvements lower down on the stream the company chose to seek authorization which would define the operation limitations necessary to safeguard the navigation interests. As pointed out by the Attorney General, a license in a case of this kind is simply a waiver of objection on the part of the government to the project, if built and operated in such manner as to avoid impairment of navigation. There are not many cases of this character, and since the seeking of federal approval is entirely optional with the builder it would seem preferable that such development be controlled by adequate state laws."

The Cumberland Falls project is held to conflict with the establishment of a state park which has long been advocated by many conservation organizations. Acquisition of the land for state park purposes was authorized by the last session of the Kentucky Legisla-

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ture under a gift of $230,000 by T. Coleman duPont. The Act provided that if the State Park Commission failed or neglected to acquire the land within ninety days after passage of the bill, the Attorney General should take steps to obtain the land by purchase or condemnation proceedings. The Cumberland Hydro-Electric Power Company refused the state's offer of $230,000 for the acreage, and on July 30 announcement was made by the State of Kentucky that condemnation proceedings to acquire Cumberland Falls and the 593 acres adjacent to them had been filed in the Whitley Circuit Court by Attorney General J. W. Cammack.

Seek to Clear Land Titles of Settlers in National Forests

To prevent the ousting of bona fide residents on lands added to National Forests in North Carolina, the United States Forest Service is now seeking to grant clear title to the settlers.

In settlement of a bond due the federal government, approximately 32,000 acres in Graham and Blake counties have been conveyed to the United States. By an act of Congress of 1912, these lands were transferred to the Department of Agriculture for administration as parts of National Forests. In taking over the lands, the Forest Service ascertained that a number of bona fide residents were in possession of small tracts and in some instances had been in possession without title for several generations. They had built homes, cultivated their fields, and reared their families, but had no legal title or right because under the law the principle of possession is not adverse to the United States.

The Secretary of Agriculture felt that, although these resident claimants had no legal rights, their moral equities would justify waiving the title vested in the United States and giving to the settlers a clear, unencumbered title to their homes. He has repeatedly recommended to Congress the passage of a statute which in deserving cases would permit recognition of the rights of actual settlers. Bills introduced by Senator Overman and Representative Pritchard of North Carolina are now pending in Congress looking to the relief of bona fide residents on these lands. If the bills are approved, the Forest Service will be able to grant relief for a period which, in other circumstances, would ripen a prescriptive title in the residents. The bills, if passed, would apply only to actual settlers.

Idaho Company Embarks on Forest Management

J. P. Weyerhaeuser, general manager of the Clearwater Timber Company, Lewiston, Idaho, announces that that company is now embarked upon a selective logging program on its 225,000 acres of timberlands. The company is capitalized at $9,000,000 and operates the largest white-pine sawmill in the world, with a capacity of more than two million board feet of lumber annually and a present cutting program of about 150,000,000 board feet. The area of a quarter of a million acres of timber is about fifty miles long and is adjacent to comparable stands on state and federal holdings.

The plan contemplates the cutting of white pine trees from ninety to 120 years old whose minimum diameter in pure stands of white pine will be seventeen inches whereas those in mixed stands of white pine will be cut to thirteen inches. The entire area has been cruised and all trees will be marked before they are allowed to be cut. The cost of cruising the area and marking the trees amounts to about five cents a thousand board feet, but this cost may be reduced in the future to three cents a thousand board feet. Marking and measuring the trees is usually done about three months in advance of the actual cutting.

Plans contemplate going over the entire area for the first cutting in thirty or thirty-five years, but to keep the mill going on its present production of 150,000,000 board feet per year, it will be necessary to get the equivalent of five or possibly ten years' cut from the neighboring lands in state and federal ownership.

1929 Destructive Forest Fire Year

Forest fires during 1929 were more destructive than at any time since the federal government began gathering statistics, according to the United States Forest Service. Forty-five million acres of forest land were burned over, and timber valued at more than $100,000,000 was destroyed. This exceeds all previous records of damage by nearly $15,000,000 and exists in the face of greatly increased efforts to control the fires.

Under the stimulus of cooperation extended under the Clarke-McNary law the forest area in the several states under protection was expanded by more than 11,000,000 acres, leaving 190,000,000 acres of forest land without some form of organized protection.

Out of nearly 400,000,000 acres of forest land under protection, 4,877,000 acres were burned over, of which a little less than 1,000,000 acres was covered with mature merchantable timber. The rest of the protected area burned was promising second-growth and brush. The Forest Service admits that financial losses are difficult to estimate, but figures that they amounted to at least $14,000,000.

The greatest losses were on the comparatively smaller area of unprotected lands, where fires on more than 41,000,000 acres caused damage of nearly $88,000,000.

Unusual droughts together with high winds are given as the cause for the unusual increase in fires, but as always the primary causes may be placed at the door of careless smokers, careless campers, and persons who purposely set fire to the woods for some selfish end.

Tariff Commission to Study Lumber Costs

A resolution calling for an investigation by the Tariff Commission into the cost of producing softwood lumber and timber in the Pacific Northwest States, introduced by Senator Charles L. McNary of Oregon, was agreed to by the Senate on July 16. This is the result of the controversy in the Senate during the consideration of the Hawley-Smoot law which occupied several days of debate. It is particularly timely because of the recent reports by the Department of Commerce of increased receipts of softwoods from foreign countries including pine, spruce, cedar, hemlock, fir, and cypress. Canada shipped to the United States the bulk of these materials, but large quantities came from Germany, Soviet Russia, Yugoslavia, Brazil, Czechoslovakia, and Nicaragua.

Exports of forest products from British Columbia to the United States during June included 51,596,000 board feet of lumber, and 11,759,000 board feet of logs.

During May, Canada shipped to the United States 110,390,000 board feet of softwoods valued at $2,563,379, while in April shipments of similar woods amounted to 102,260,000 board feet valued at $2,534,725. Softwood shipments received from all foreign countries during these two months amounted to 115,850,000 board feet and 104,321,000 board feet, respectively.

Of the Canadian exports to the United States in May, a total of 37,233,000 board feet consisted of Douglas fir lumber, while 39,081,000 board feet were of spruce and 16,324,000 board feet of hemlock. The United States takes the largest portion of all Canadian lumber exports.

Add to Rocky Mountain Park

Approximately 14,144 acres of land were added to the Rocky Mountain National Park, Colorado, by a recent proclamation of President Hoover. The new addition adds to the park the headwaters of the Colorado in the vicinity of the Never Summer Mountains, picturesquely so-called by the Indians because of the everlasting snows that spatter their summits. This is a magnificently scenic area.

In this region the Continental Divide makes a U-shaped loop, forming a broad valley through which the Colorado River winds. About one-third of this basin was included in the National Park, the remaining portion being in the adjoining National Forest. Under the presidential proclamation it is all included within the park.

In addition to its scenic value, the new area is of geologic interest and constitutes a natural unit of the park. Through it will be constructed a portion of the new Trail Ridge Road, which when completed will be the highest continuous road in North America. At one point it will reach an altitude of 12,120 feet, and nine miles of its total length of twenty-eight will be above timberline.

St. Lawrence University Appoints Associate Forester

The Department of Forestry at St. Lawrence University announces the appointment of Mr. Ralph G. Unger, of Hudson, New York, as associate forester with headquarters at Malone. This is part of St. Lawrence Forestry Department's extension policy, made possible by the gift of $100,000 from F. L. Carlisle & Company, Inc., for the promotion of forestry in northern New York. Mr. Unger is a graduate of the New York State College of Forestry at Syracuse University with the class of 1930. His principal duties will be to work with the county officials of Franklin and Clinton counties in forest planting in accordance with the provisions of the Hewitt Bill granting aid to counties for forestry work. In addition he will work with any and all individuals and organizations in the above mentioned counties in promoting the reforestation of idle land.

Billion Feet of National Forest Stumpage Sold

The International Paper Company's bid of nearly $5,500,000 for one billion board feet of lumber in the San Juan and Rio Grande National Forests in Colorado has been accepted by the Forest Service through the regional forester at Denver.

The timber is to be cut principally in the form of pulpwood to be manufactured into paper through the Trans-Mississippi Development Company, a subsidiary of the International Paper Company. It is expected that this will bring to Colorado a new industry, with a substantial payroll and considerable taxable property. The contract calls for payment to the Government of a stumpage price of approximately $5,500,000. Of this amount, 35 per cent, or about $2,000,000, will be returned in cash to the State of Colorado in appropriations for roads and schools.

Forest Service plans call for permanent operation which will not remove the timber faster than it may be replaced by growth. This provides for the preservation of the forest with its scenic and watershed protection values, as well as for the establishment of a permanent industry.

Roadside Beautification in New Jersey

The creation of a bureau to direct beautification of roadsides has been approved by the New Jersey State Highway Commission. This is the result of a suggestion offered by Jacob L. Bauer, State Highway Engineer, who declared that better results could be obtained by placing the work in charge of a landscaping and planting expert. The Brunswick Pike, running from Trenton to New Brunswick, has been designated by the commission as a demonstration route and $30,000 has been set aside for scenic improvement.

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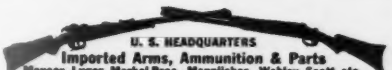

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Book News and Reviews

THE ECONOMICS OF FORESTRY, by W. E. Hiley. Published by the Oxford University Press, 114 Fifth Avenue, New York City; 270 pages; illustrated. Price $7.

The author is a lecturer in forest economics at the School of Forestry and the Imperial Forestry Institute at Oxford. Accordingly the inclusive subject of forest economics is considered from the point of view of a British subject. Within the covers of the book Mr. Hiley discusses world timber resources and the economics of forest cultivation as influenced by the economics of timber conversion and transportation.

The American forester will read with interest his conclusion regarding the predicted timber famine. After taking into consideration the immense volume of Russian timber which rising prices will make increasingly available, he declares that Europe if left to herself could continue for a long period to meet her needs for coniferous timber. "The danger of a shortage arises from the enormous consumption in the United States." He bases this conclusion concerning the American situation largely upon the Capper report of 1920.

Drawing upon forest examples from all parts of the world, Mr. Hiley discusses the profitableness of forestry and the rates of interest which forest operations may be expected to bear. As a result of his calculations he concludes that if good management can be assured, forest properties in Britain may be expected to yield an average return of 4 per cent.

In arriving at his conclusions the author discusses the "worst-first" theory so frequently practiced in America. Mr. Hiley makes the assertion that the cost of producing timber is much less on good than on poor quality land even when the cost of the land is taken into account. Similar generalizations have been observed in agriculture and they are apparently applicable over a wide range of cultivation. This, of course, is an argument for the use of the best possible sites. He admits the practical difficulties, however, when he says, "But foresters are generally debarred from using land which has an appreciable agricultural value and are therefore confined to the cheaper soils."

The book is comprehensive and readable. Although technical in places, it may be read with relative ease and pleasure and will serve as a valuable source book for the forest student.—*G. H. C.*

BIG TREES, by Walter Fry and John R. White. Published by Stanford University Press. 114 pages; illustrated. Price $2.

"An aura of timelessness hovers over the Big Trees," say the authors, glorifying the superb sequoias of California. Containing the more important information derived from observation and intensive study of these ancients, their little book advances new facts and theories about the mammoth trees, which are called the oldest living things and which were only discovered in the nineteenth century.

The feeling of spirituality and reverence which pervades the beholder of the Big Trees has been captured by the writers. After reading the description and history of these giants it is easy to understand the contention that "A tree which is 300 feet high, which is thirty feet in diameter, and which weighs 6,000 tons is more than a big tree. It is a Big Tree."—*A. W. H.*

THE LAST STAND OF THE PACK, by Arthur H. Carhart and Stanley P. Young. Published by J. H. Sears and Company, Inc., New York City. 295 pages; illustrated. $2.50.

Detective stories that leave the reader with a strong feeling of gratitude toward the detective whose carefully planned efforts resulted in the conviction and death of the culprit, but with it all a certain admiration for the condemned one, always prove interesting reading. Without professing to be a boy's book, it contains a collection of animal stories which will appeal to boys as well as men. They are based on the official records of a series of dramatic events leading in each case to the capture of a wolf who had become a most expensive nuisance over a rather large stock-raising region. They are real wolf stories which deserve to be on the same shelf with Thompson-Seton's "Lobo."

More than that, they are splendid proof of the efficient methods of predatory animal control applied by the United States Biological Survey. Several of the stories present strong cases against the old bounty system which the salaried hunters of the Survey are supplanting. The stories "glorify" the Government hunter; but, unfortunately for the hopes of many young men, they describe conditions so rapidly disappearing from American life that few who read the book can expect to have similar experiences.—*G. H. C.*

THE CHARM OF TREES, by Thomas F. Davies, Published by Fleming H. Revell Company, New York. 125 pages; illustrated. Price $1.50.

Bishop Davies is one of those "to whom the most marvelous thought of God is a tree, for here is beauty, life, growth, and beneficence." He recognizes strong individualities in trees and feels that they often express personalities. This collection of essays, each named for a tree, combines human and tree history and characteristics as a basis for stimulating and worthwhile philosophy.—*A. W. H.*

"The Application of Silviculture in Controlling the Specific Gravity of Wood," by Benson H. Paul. Technical Bulletin No. 168, United States Department of Agriculture. Price 15 cents—The progressive exhaustion of our virgin forests and the increasing demand upon high-grade wood materials suggests silvicultural practices to control wood density. Studies conducted in stands of white ash, hickory, rock elm, sugar maple, and yellow poplar show that highest quality hardwood lumber can be produced from stands of trees grown close together. Other investigations with southern pines and second-growth redwood show that density of stand and degree of moisture in the site each influence the specific gravity of the wood produced.

CONSERVATION OF OUR NATURAL RESOURCES, edited by Loomis Havemeyer, Ph. D. Published by MacMillan Company; 531 pages; illustrated. Price $4.

Twenty years of constructive thought along the line of conservation has made necessary a complete revision of Dr. Van Hise's classical publication "Conservation of Our Natural Resources," which appeared in 1910. Dr. Van Hise's book represented a compilation of lectures given by him before the University of Wisconsin and was a remarkable evidence of broad understanding of a subject which had only recently appeared on the academic horizon. At that time conservation had to be defined, and the expression "the greatest good to the greatest number—and that for the longest time," sounded like a radical statement to many of the early industrial leaders.

The new edition of "Conservation of Our Natural Resources" is based upon the Van Hise book but goes so far beyond it that no one man has felt competent to undertake the entire work of preparation. Accordingly, Dr. Havemeyer of the Sheffield Scientific School at Yale University has secured the assistance of six national authorities to prepare chapters on five of the phases of conservation.

The mineral resources are discussed by Gar A. Roush, editor of *Mineral Industry;* water, by Frederick Haynes Newell, former Director of the United States Reclamation Service; forests, by Henry Solon Graves, Dean of the Yale Forestry School; land, by George Simon Wehrwein, Professor of Economics, College of Agriculture, University of Wisconsin; wild life, by Paul G. Redington, Chief of the United States Biological Survey, and Elmer Higgins of the Bureau of Fisheries; conservation and mankind, by the editor, Loomis Havemeyer. An able summary of the book and its objectives is included in the foreword by John Hays Hammond.

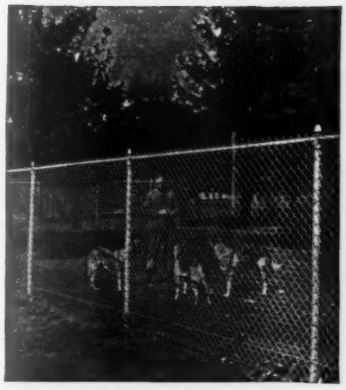
This book brings to date the relationship of forestry and wild life to the other phases of conservation and forms a real stepping stone in the presentation of facts for public consumption. The chapter on forests is in reality a record of forest development in the United States and a description of the work accomplished by the Federal Government, by the states and by the industries. A feature of the book which was not included in its original presentation by Dr. Van Hise is the chapter on wild life. Animals, birds, and fish are discussed from the economic as well as the recreational value.—*G. H. C.*

To aid women's organizations in preparing programs on forest conservation the Forest Service has prepared miscellaneous circular No. 91-M, "A Forestry Program for Women's Organizations." It contains brief statements on federal, state, municipal, and private forestry, and other material in prose and verse suitable for forestry programs. Free copies may be obtained at the regional forester's office or at the office of information, United States Department of Agriculture.

THE BIRD BOOK, by Charles P. Shoffner. Published by Richard Manson, New York, 328 pages; illustrated. Price $2.

Teachers will welcome this book which is planned to assist them in their classes. Although the author claims that it is not a technical book, the facts about bird life are found there, briefly and simply arranged. In addition, there are questions and answers—that popular form of educational material—directions for forming a bird club, the nicknames of the birds, and bird games and poems.—*A. W. H.*

"The Air Seasoning of Wood," by J. S. Mathewson. Technical Bulletin No. 174, U. S. Department of Agriculture; 56 pages; charts and illustrations. Superintendent of Documents, Washington, D. C.—The Forest Products Laboratory at Madison, Wisconsin, has been conducting studies for a number of years in the air seasoning of wood, which is one of the most important factors in the conservation of our forest resources. This bulletin includes the results of these studies and presents the general principles involved in the drying of wood.



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Reforestation Urged to Check Erosion in Mississippi

Soil erosion, brought about by repeated fires in grass and brush land, overgrazing, and improper methods of cultivation, is causing the rapid destruction of cultivated lands and abandonment of farms in Mississippi. The remedy for this unwelcome situation is the restoration of the forests, according to G. H. Lentz, silviculturist with the Southern Forest Experiment Station. Detailed erosion studies under his direction reveal that breaks and gullies are deeper in the northern Mississippi counties and that one gully in the western part of the state is 2,000 feet long, 300 feet wide, and 100 feet deep. It has advanced at the rate of about twenty-five feet each year, and over 2,000,000 tons of material have been carried out of this ravine.

Reports on Newsprint Industry

No company selling newsprint in the eastern part of the United States has a sufficient proportion of the business to constitute a monopoly, according to a report of the Federal Trade Commission sent to the Senate on July 2 in response to Senate Resolution S. 337, passed February 27, 1929. The Commission discovered that the International Paper Company sets an example of price which is followed by many other domestic manufacturers. This situation exists although the International Paper Company supplies only twenty per cent of the newsprint paper consumed in this country.

The Commission found further that the margin of profit in the manufacture of newsprint is not unreasonable. They stated that if Alaskan newsprint can be delivered at New Orleans for $58 a ton, it can be sold at a price less than that proposed by the governments of Quebec and Ontario.

Reference was made to the tendency toward monopoly by the Crown-Zellerbach Corporation in the West and that organization's acquisition of stock of the Crown-Williamette Paper Company while in control of the Washington Pulp and Paper Company. These are subject to further investigation.

Duke University Lays Foundation for New Forestry School

The first step in the establishment of a forestry school in Duke University, in North Carolina, was indicated in the recent announcement of the election of Dr. C. F. Korstian as director of Duke Forest and Professor of Silviculture in Duke University. Complete plans for the school will not be made until after plans for the forest have been developed and further study has been made of the need for additional forestry training in the South and the opportunities available at Duke for specialized forestry education. Present tentative plans for next year provide for a survey, inventory and preliminary management plan for the Duke University Forest, which consists of approximately 5,100 acres adjoining the Duke University campus.

The Forest lies in the lower Piedmont region and consists of second growth shortleaf and loblolly pines and hardwoods. Because of the representative nature of this tract, and because of its size and location, it is expected to serve well as a research and demonstration forest.

Dr. Korstian was graduated from the University of Nebraska, in 1911, and the Yale Forest School in 1926.

Greenland Musk-Oxen for Alaska

An order for a herd of thirty musk-oxen, to be obtained in Greenland and introduced into Alaska, has recently been placed by the United States Biological Survey, pursuant to an appropriation by the last session of Congress of $40,000 for establishing an experimental herd of these animals in the Territory. They will be delivered in New York, whence they will be shipped under the care of a representative of the Biological Survey, via Seattle, Washington, to Fairbanks, Alaska. They will live in a large inclosure set aside by President Hoover for use in investigations of reindeer and musk-oxen, and will be cared for by men acquainted with the peculiar problems of feeding, breeding, and management of animals under Alaska conditions.

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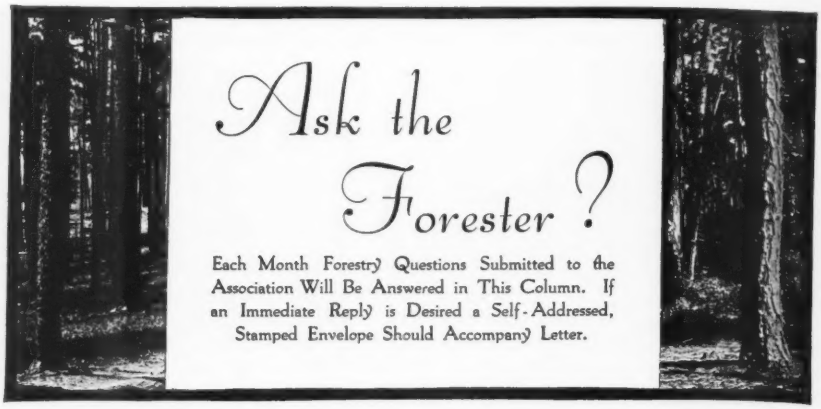


Ask the Forester?

Each Month Forestry Questions Submitted to the Association Will Be Answered in This Column. If an Immediate Reply is Desired a Self-Addressed, Stamped Envelope Should Accompany Letter.

QUESTION: I should like a description of fire lines suitable for protecting a 4,000-acre tract of second growth forest land.—*G. G., New York.*

ANSWER: The Pennsylvania Department of Forests and Waters constructs safety strips from 100 to 200 feet wide along many of the railroad rights of way. These are usually prepared in the fall and winter when the men scrape or plow a clean path from two to four feet wide down to the mineral soil at the outside boundary of the proposed safety strip. During clear, dry days of early spring a crew with water and tools are directed to burn the strip between the two plowed boundary lines. In Michigan similar safety strips are constructed at intervals of one mile throughout the state forest and somewhat more narrow strips are constructed at half mile intervals. These gridiron the property so as to break up the area into blocks of 160 acres. Southern foresters find that well-cleared strips from ten to fifteen feet wide serve as a barrier against surface fires and a place from which fires may be fought and necessary backfires set.

QUESTION: How can I obtain a pair of buffalo?—*W. W. B., Texas.*

ANSWER: The Bureau of Biological Survey of the United States Department of Agriculture sometimes has buffalo for sale at several of the big-game preserves in the West, namely, the National Bison Range in northwestern Montana, Wind Cave Game Preserve, near Hot Springs, South Dakota, and Sullys Hill Game Preserve, near Devils Lake, North Dakota. At this time all the surplus animals have been removed from the reservations. These have been selling during the past season at prices ranging from $30 to $56 each on the reservation. The parties purchasing the animals are required to pay all costs in connection with their capture, crating, and hauling to the railroad, in addition to express charges. Such costs, exclusive of shipping charges, usually amount to about $20 per animal. It is suggested that communications regarding buffalo be addressed to the Biological Survey, U. S. Department of Agriculture, Washington, D. C., late in August or early in September.

QUESTION: Are the northern pine second-growth forests classed as marginal, submarginal or supermarginal?—*C. H. S., Jr., Wisconsin.*

ANSWER: Jack-pine land, as a rule, is nonagricultural sand and would be classed as submarginal. Some jack-pine lands have been improved by heavy applications of marl so as to produce crops of alfalfa.

White pine grows on better soils, usually underlain with clay, which may often be classed as agricultural. Norway pine occupies an intermediate position as compared with the other two pines, and land upon which it grows naturally would probably be classed as of doubtful or marginal agricultural use.

QUESTION: What is the average life of the Lombardy poplar under favorable conditions? Is this tree extensively planted in this and foreign countries for screens and highway planting?—*G. H. R., Virginia.*

ANSWER: No records can be found of the average length of life of Lombardy poplar, but they should be expected to grow fifty or sixty-five years under normal conditions. Authorities generally refer to it as a short-lived tree, largely due to the European poplar canker.

It grows fairly satisfactorily in all parts of the United States, and is especially to be recommended where quick-growing screens or tall columns of green are desired. It is described as a staminate sport of the European black poplar. Originating on the plains of Lombardy about 1700, it has been widely planted over the world by means of cuttings.

QUESTION: Does the roughened, checkered appearance of the bark on old popple trees indicate that the tree is dieased and the wood deteriorating?—*G. O. H., New Jersey.*

ANSWER: This description is fairly characteristic of the bark of trees as they approach maturity and does not necessarily indicate disease. However, the quaking aspen of the Northeastern States, as distinguished from the large-toothed poplar is subject to a black-barked canker. This fungus slows the growth and will eventually ruin the timber.

The Swedish Tourist Association

By Birgit Sverdrup Baldwin

Although one of the most beautiful countries in Europe, Sweden has remained comparatively little known to outsiders. But Sweden is well-known to the Swedes! The blood of the ancient Vikings still flows in their veins and calls them forth to travel each year. It urges them to voyages of discovery, to wanderings in the hills and among the island fringes along the coasts. Still they long to find new countries, new peoples, new customs; their natural love of beauty in nature, nourished by their environment, leads them to enjoy travel for its own sake.

These desires may be satisfied without leaving their own country, which possesses possibly more natural wonders than any country of Europe except Switzerland and Norway, and the reason is the Swedish Tourist Association (Svenska Turistföreningen).

Founded in 1885, it has grown constantly in size, activity and influence. In 1928 it had 117,575 dues-paying members—in a country with only 6,000,000 population, and that largely rural. What society in New York City has 100,000 members? As a private organization dependent for support upon membership dues its success is unique. It combines the features of our mountaineering clubs, the National Geographic Society, and a number of lesser organizations. Membership entitles one to a handsome yearbook, maps, guidebooks, etc. and substantial discounts at a number of representative shops in each town and city of any size. Furthermore its organization has become so country-wide that no community, no matter how small, is without an agent of the Association who is ready at all times to give information to members about the vicinity and arrange transportation and lodgings in advance.

Touring in Sweden has not yet become as motorized as in America, but cheap railways make travel possible for all; in fact, the relative scarcity of motor cars makes walking still practicable on the highways. The Tourist Association arranges trips costing very little, which lead to the deepest woods, oldest castles, over the mountains, lakes and rivers to waterfalls and glaciers.

But the Tourist Association is not useful alone to those who travel; it is a tremendous educational power in the country. Through its publications and pictures it instills a love of country in children at an early age; pictures for scrap books are distributed to school children, not merely "pretty pictures," but scientifically selected with a view of showing characteristic features of the different parts of Sweden. There are fertile fields, stony little pastures and mountains white with snow. Beside the fields are aristocratic castles, in the pastures little red cabins, and in the mountains hardly anything but huts. But near these Lap huts may be discerned the more solid shelters of the Tourist Association.

The yearbook alluded to before is not merely a compilation of statistics for the previous year; it is a mine of beautiful stories about Sweden and its wonders, luring the reader out to see and feel the originals in the land of the midnight sun, the mountain pastures of Härjedalen, the lakes of Värmland, the heaths of Västergötland, or the venerable island of Visby, rich in memories of the 12th century with its churches and city walls. Those who do not even read the yearbook can yet not escape being captivated by the admirable large, artistic pictures which accompany it as supplements. "Know thy Country" is the Association's motto, as our slogan is "See America First." Thanks to the Tourist Association the average Swede has a thorough knowledge of his own country, far better than the average American.

4-H Clubs' Forestry Work Grows

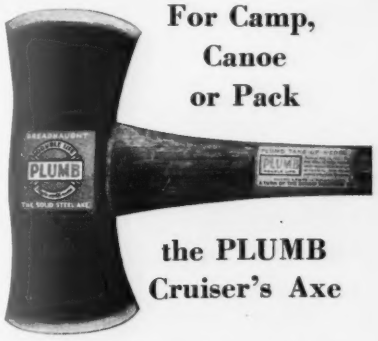
Reports from the office of cooperative extension work in the United States Department of Agriculture stated that during 1929, 4,796 boys and 812 girls in 330 boys' and girls' clubs started work in connection with the forestry projects. Of this number 3,325 boys and 527 girls carried the work to completion. During the same year the county agricultural agents assisted nearly 5,000 farmers in forest plantings, wind break planting and the adoption of better forest practices in the farm woods.

Scout Wins Forestry Medal

The poster contest conducted under the auspices of the Maryland State Department of Forestry for the medal awards of The American Forestry Association was won by Boy Scout George B. Keester, of Troup 334, Annapolis. His poster depicts a burned forest of snags, the snags being black against a yellow background, and bears the slogan, "Put Out Your Camp Fires," and the words, "Protect Forests." Scout Keester has been awarded the personal medal of The American Forestry Association, and the large medal plaque goes to his troop for one year.

Scout Umhau Wolfe, of Troop 91, Baltimore, received honorable mention for the poster he submitted.

The contest was open to all Boy Scouts in good standing living in Maryland. The points on which the posters were judged were: Originality, visibility, appeal, slogan, and impression. A committee consisting of Gordon T. Backus, District Forest Inspector of the United States Forest Service, and Edwin Tunis, a well known artist of Baltimore, were chosen to make the award.



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Park Service Wants Purchaser

The United States Civil Service Commission announces an open competitive examination for land purchaser to fill vacancy in the National Park Service at San Francisco, California. The entrance salary is announced at from $3,800 to $4,400 a year.

The duties are to assist the senior land purchaser in such activities as the classification of private lands; the appraisal of individual tracts of private land under classification, upon which to base negotiations for purchase; and to examine titles and render expert testimony on condemnation proceedings. Applications must be filed with the Civil Service Commission at Washington, D. C., not later than September 3, 1930.

Army Undertakes National Evaluation of Water Resources

The federal government through the Army Engineer Corps will make what is probably the most extensive and comprehensive study of the nation's waterways ever undertaken. Evaluation of the water resources of the entire United States with the exception of the Colorado River basin and a few other areas has been authorized.

This national survey, authorized by Congress, originally called for an expenditure of about $7,000,000, but, after the Mississippi flood of 1927, the fund was increased to more than $12,000,000 and includes a comprehensive and detailed investigation of the possibility of flood control in the Mississippi by means of reservoirs.

The survey will cover 183 streams, the largest of which are the Mississippi, the Missouri and Columbia rivers, with approximately 700 persons, including the full or part time of fifty Army engineers engaged in the task which is expected to be completed in less than three years.

Connecticut Photographic Contest

The Connecticut Forest and Park Association in cooperation with the American Nature Association announces a prize roadside photographic contest, in order to encourage a greater appreciation of the beauties of Connecticut and to arouse the public to the need for roadside beautification. Three first prizes of $10 each and three second prizes of $5 each are offered.

Canada Newsprint Concerns Merge

The amalgamation of the Canada Power and Paper Corporation and the Anglo-Canadian Pulp and Paper Mills, Limited, the former controlled by the Holt-Gundy interests and the latter by the Rothermere, has created what is claimed to be the largest newsprint manufacturing corporation in the British Empire.

Intermountain Forest and Range Experiment Station Established in Utah

Establishment of a new forest and range experiment station to carry on an enlarged program of range and timber-growing research in the Intermountain Region has just been approved by the Secretary of Agriculture. The new station will be maintained by the Forest Service and will have headquarters at Ogden, Utah. Its establishment was made possible by increased appropriations carried in the Agricultural Appropriation Act for the fiscal year 1931.

The Intermountain Forest and Range Experiment Station will consolidate research on range and erosion problems carried on by the former Great Basin Experiment Station and the studies of the timber-growing in this region provided for by the appropriation. It is expected that the biological investigations of the Bureau of Biological Survey in the region also will be carried on at the new station.

C. L. Forsling, silviculturist, who has been director of the Great Basin Station since 1922, will be director of the new station.

Forests of California Set New Revenue Record

The eighteen National Forests of the California Region established a new highwater mark in receipts when they returned to the Federal Treasury, from the use and sale of natural resources, a total of $1,647,360 in the fiscal year ending June 30, 1930, according to the United States Forest Service. This total is an increase of $228,221 over the receipts for the previous fiscal year, and marks a 123 per cent gain in business for the California Region in the past decade.

The sale of mature and overripe timber from the federal forests yielded $1,195,664 of the total; grazing fees for cattle and sheep using National Forest ranges, $212,930; special and recreational uses, largely rented summer home and resort sites, $136,496; water power development, $79,112.

As National Forest lands and resources in California are nontaxable, the federal government, under existing laws, will return twenty-five per cent of the receipts, or approximately $410,000, to the state for distribution to counties in which the forests are located, for road and school development work. The Forest Service will also spend an additional ten per cent of the receipts, or $165,000, on roads and trails in these same counties, making a grand total return to California from the National Forests of $575,000. This cash return to and expenditure in the state is in addition to $2,500,000 spent by the Forest Service on state, interstate and county highway systems within and adjacent to the forests, and for the protection and management of the National Forests.

First Award By Pack Forest Education Board

Making its first award of fellowships ranging up to $1,800 a year for training leaders in forestry, the Charles Lathrop Pack Forest Education Board announced its selection of five Americans and one Canadian for the year 1930. The winning candidates were chosen from about ninety contestants.

The fellowships were established to encourage men of unusual intellectual and personal qualities to obtain training that will equip them for important work, either in the general practice of forestry, in the forest industries, in the teaching of forestry, in forest research, or in the development of public forest policy. The successful candidates are:

James Lindsay Alexander, assistant professor, College of Forestry, University of Washington, Seattle, Washington. To make an investigation of forest survey methods with the object of developing the needed precision with the least cost, at the University of Toronto, Canada, the University of Washington, and in the forests of the Eastern and Western United States.

Ralph Caird, graduate student, University of Chicago. To make a general study of forestry at the School of Forestry and Conservation of the University of Michigan, and to do advanced work in tree physiology and pathology.

Bernard Frank, assistant forest economist, United States Forest Service, Washington, D. C. To make studies at the University of Wisconsin and field investigations in the Lake States of land classification methods and land utilization technique especially as applied to forest lands, together with the preparation of a program of land use for a specific region.

George Ritchie Lane, forester in charge of reforestation, Canada Power and Paper Corporation, Grand' Mere, Province of Quebec, Canada. To make field investigations of the planting, growth, and yield of pulpwood species in the Maritime Provinces of Canada.

Raymond Frank Taylor, forest examiner, United States Forest Service, Juneau, Alaska. To make studies of the silvicultural management of coniferous forests at the School of Forestry, Yale University.

John Burton Woods, forester, Long-Bell Lumber Company, Longview, Washington. To make field investigations and to gather material on forestry as practiced in private timberlands.

Rankin Appointed to North Carolina Board of Conservation

R. Grady Rankin, a prominent textile mill operator of Gastonia, North Carolina, has been appointed by Governor O. Max Gardner as a member of the Board of Conservation and Development. He succeeds Ben B. Gossett of Charlotte.

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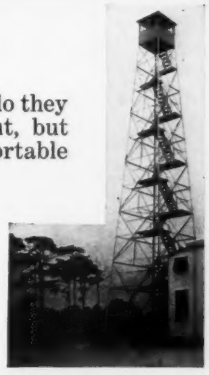

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Ships of Nemi

(*Continued from page* 554)

the first appearance of motion on spheres (wooden platforms rotating on bronze spheres) was found in the ship of Nemi, as well as a magnificent cock perfectly formed and polished, a paternoster work to raise the water from the hold, and another water-raising installation with wooden piston pump.

The bronzes discovered have a particular and artistic interest, and complete the collection already gathered by Borghi in 1896 consisting of six pieces—a few lion and wolf heads, a head of Medusa, an augural hand. Present recoveries include a wolf's head adorning the end of a plank, a splendid lion's head which adorned the top of a mooring pillar, and other bronzes with heads of wolves, lions and tigers of perfect workmanship. A bronze balustrade was alongside the ship's parapet, the pillars of which had sculptured heads, one of Satyr and another of Bacchante, as shown in one of the illustrations.

The second ship, which is also on the side facing the east, at about two hundred meters distant from the first one, is of larger dimensions, measuring seventy-two meters in length and twenty-four meters in width. The stern is completely buried by the mud and the prow is missing. The remainder of the ship, according to the explorations made by the divers, is completely stripped of every ornament. On the other hand its structure and its construction are exactly identical with that of the first ship. But in order to put this ship ashore, the level of the lake would have to be lowered by seven meters. Recently, His Excellency Mussolini decided to renounce the plan, because the great expense involved would not be compensated by the interest which the ship would arouse, being perfectly identical to the one already brought ashore. Such decision by the head of the government was perhaps prompted by the fact that fear exists for the conservation of the first ship.

All the bronzes, the floors, the mosaics were reconditioned and placed safely in a museum purposely erected in the vicinity of the ship, but the wood of the hull, and particularly the oak, elm and fir wood crumbles day by day and falls away in an alarming manner. This is why the problem of how to preserve the wooden parts of the ship is one of great and immediate urgency. Professor Sibilia was able to state that the changes suffered by the wood have noticeably diminished its specific weight and that while the wood has remained almost intact, the cellulose is almost completely destroyed or altered.

A German firm has proposed to use one of its products called ecozid to preserve the precious ship. This substance is made on the basis of silver nitrate. The experiments made by Professor Sibilia on the wood of the Nemi ship, by treating it with ecozid and infecting it with growth of xylophagous fungus (*coniphora cerebella, Polyporus vaporarius*) give promise of very effective action. Other propositions have been submitted and are examined by a special technical commission and it is hoped that modern chemistry may be able to insure the preservation of a monument which holds such great interest for all civilized peoples of the world.

Potomac Power Project Refused

An application of three years' standing of the Byllesby Corporation of Chicago, Illinois, to develop power from the Great Falls of the Potomac River has been rejected without prejudice by the Federal Power Commission.

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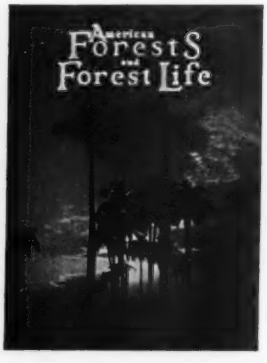

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September, 1930

Forestry in New Zealand

(*Continued from page 566*)

areas. As these sales reached their peak soon after the scheme was initiated some few years ago, it is not surprising that the areas planted decreased substantially from about 50,000 in the 1926 planting season to 39,000 in the 1927 planting season. Although the exact figures are not yet available it is probable that the total for the 1928 season was not much above 30,000 acres and that the plantings in 1929 will not greatly exceed 20,000 acres. By the end of the 1929 planting season the total plantings by commercial interests should be between 140,000 and 150,000 acres.

It is the small casual investor who has been attracted into the forestation business by the optimistic and glowing predictions of company promoters. The more cautious and regular investors such as those who are guided by the advice of stock exchange brokers have not invested heavily in the business. It may be said, however, that provided these man-made forests are properly managed, the investor should receive a fair return on his money. A considerable amount of overseas capital has been contributed.

For those unacquainted with the rapid growth of introduced species in New Zealand it may come as a surprise to learn that the Forest Service estimates the average annual increment to be about 250 cubic feet, or 1,500 feet board measure per acre, which is several times the average annual increment in North America.

The system of levying taxes, etc., during the whole life of a crop of trees, on the unimproved value of the land, into which the value of the trees does not enter, stands in very strong contrast with the system in vogue in most parts of the United States where the value of the growing trees is included in the value of the land, and a property tax levied on the whole. When the crop of trees is harvested the owner pays an income tax, but in assessing the profits for this purpose full allowance is made for both the original cost of forming plantations and the annual maintenance charges. The interest on capital expended in meeting these costs is not allowed.

Emanuel Fritz Named Editor

Professor Emanuel Fritz, in charge of wood utilization and lumbering in the School of Forestry, University of California, has succeeded S. T. Dana, Dean of the School of Forestry at the University of Michigan, as editor of the Journal of Forestry, the official organ of the Society of American Foresters. Professor Fritz is a graduate of Cornell University and the Yale Forest School. At one time he was connected with the Forest Service.

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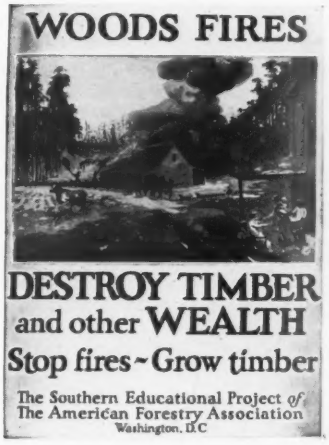

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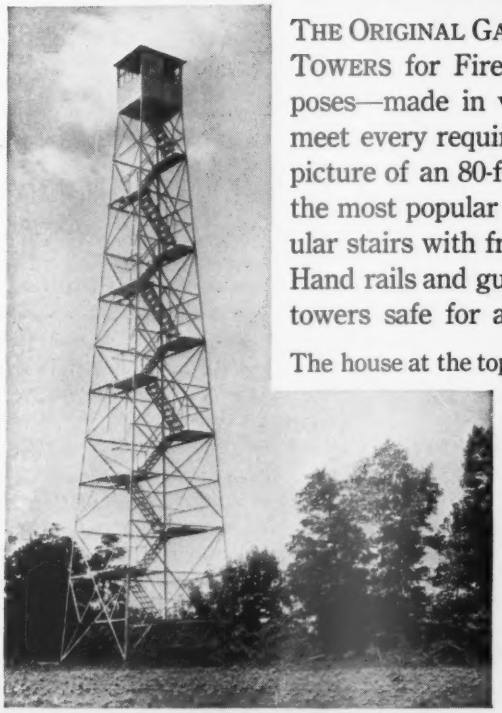

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Georgia Lumber Tax Restrained

The collection of an occupation tax from more than twenty Georgia lumber dealers and manufacturers was prohibited by a permanent injunction issued by the Bibb County Superior Court. This tax law was enacted in 1929 and levies a graduated tax on lumber dealers and manufacturers located in or within three miles of cities and towns. In granting the injunction, the court held that the phraseology of the act was vague and incapable of legal definition.

Restoration of Washington's Birthplace Begun

Handmade bricks of native clay are being made at the George Washington Birthplace National Monument at Wakefield, Virginia, to be used in reconstructing the house in which George Washington was born. It will be a replica of the old homestead which was destroyed by fire in 1780. The restoration work in connection with the house and surrounding grounds is being carried on by the National Park Service in cooperation with the Wakefield National Memorial Association. In addition to arousing public opinion in favor of restoring and preserving Wakefield, the Memorial bought 100 acres of the historic lands and is spending approximately $50,000 toward the restoration. Congress appropriated $80,000 for the Wakefield work—$30,000 for moving the granite shaft which has marked the homesite, and $50,000 for restoration.

Mr. John D. Rockefeller, Jr., purchased an additional area of approximately 254 acres to save it from commercialization. The total area of the George Washington Birthplace National Monument, established by act of Congress in January, 1930, will be approximately 365 acres.

Wood-Utilization Exhibit

The wood-utilization exhibit of the National Committee on Wood Utilization of the Department of Commerce has been studied by more than half a million people during the showing at the American Fair held in the Atlantic City Auditorium from July 14 to August 27. Posters, charts and models illustrated the principal projects of the committee. Residence construction was demonstrated by such features as proper insulation, the correct method of laying shingles, the use of treated lumber to prevent the attack of insects and decay, and the advantage of grade-marked lumber. A photographic description of the wooden airplane hangar fire test made at the Bureau of Standards attracted much attention. The use of wood flour, secondhand wooden containers, and odd pieces of lumber were emphasized in this exhibit.

"Who's Who" Among The Authors In This Issue

Ralph K. Day

RALPH K. DAY, assistant silviculturist at the Central States Forest Experiment Station, at Columbus, Ohio, has been with the United States Forest Service since 1922. He was graduated from the New York State College of Forestry, and took graduate work at the University of Montana and Ohio State University.

DR. ALDO PAVARI is a professor at the Forestry Experiment Station of the Royal Higher Institute of Agriculture and Forestry, Italy.

WILL C. BARNES recently resigned as secretary of the National Geographic Board to complete a book dealing with the history of Arizona. Author, soldier and stockman, he served for more than twenty years with the United States Forest Service, as assistant forester in charge of range management.

PAUL H. ROBERTS, Forest Supervisor of the Sitgreaves National Forest, in Arizona, for the past eight years, entered the Forest Service following his graduation from the University of Nebraska in 1915.

FRANK A. WAUGH is head of the Division of Horticulture and professor of Landscape Gardening at the Massachusetts Agricultural College, at Amherst.

B. L. BROWN is a photographer at St. Paul, Minnesota; ALEC R. ENTRICAN is Engineer in Forest Products, New Zealand State Forest Service; HEISTER DEAN GUIE is a well-known writer of Seattle, Washington; GEORGE R. PHILLIPS is State Forester of Oklahoma.

Clay Perry

CLAY PERRY is a well-known outdoor writer. Born in Wisconsin, he was engaged in logging and lumbering after leaving Lawrence University, and is at the present time a director of the American Log Rolling Association. He was for twelve years connected with a number of New England newspapers.

DON CAMERON SHAFER, lives at Schoharie, New York; THOMAS H. BARTILSON calls Elkton, Maryland, home; and G. H. COLLINGWOOD is Forester for The American Forestry Association.

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Pacific Type "N" Pumper complete forms a well balanced, light weight pack, is easily transported by one man. The load is arranged so as to distribute the weight evenly while carrying.

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Type "N" Pacific Pumper—weight only 70 pounds—a marvel of efficiency—is internationally recognized for its outstanding superiority and dependable service. Endorsed by forestry and conservation organizations and officials throughout the United States and in Canada, New Zealand, Japan and other countries. Has no "weight efficiency" competition. At 150 lbs. pressure will put water to the top of a 345-ft. hill, through 1½" rubber-lined hose.

SEND FOR CATALOG

Ask for Type "N" Catalog describing and illustrating this remarkable pumper. We issue separate catalogs describing each type of Pacific Pumper. Other pumpers include Type "P," wt. 175 lbs.; Type "K," wt. 85 lbs.; Type "A," wt. 38 lbs. Separate catalog also for accessory equipment.

Manufactured in Seattle, U. S. A. by

PACIFIC MARINE SUPPLY COMPANY

Far East Representative—J. T. MASHIKO, No. 2 Kajicho Kandaku, Tokyo, Japan

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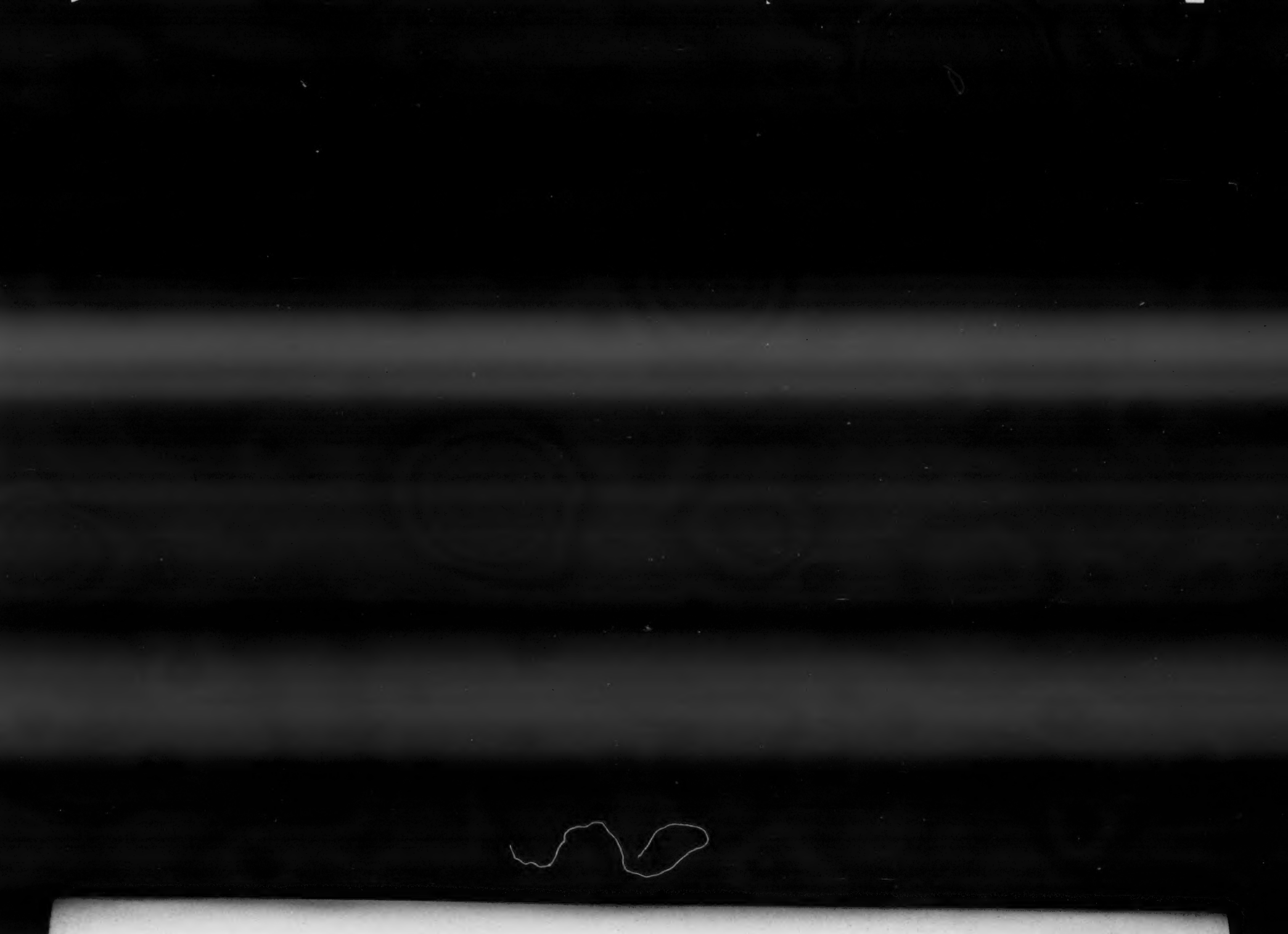
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